DECEMBER 1988

ENTERING THE WESTERN EUROPEAN INFORMATION SERVICES MARKET

A STRATEGIC ANALYSIS WESTERN EUROPEAN INFORMATION SERVICES MARKET, 1988

INPUT®

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Abstract

This report, prepared specifically for Martin Marietta Data Systems, identifies possible development strategies within the Western European information services market for systems integration contracts and related professional services. The report concentrates within Europe on the country markets of France and West Germany, with some reference to other country markets—for example Italy, the Benelux, Spain and the Scandinavian countries.

This report provides evidence of the existence of a systems integration market through references to large-scale systems projects in these countries. INPUT's estimates of the size and growth prospects for these markets are included, together with a description of the user and competitive environments. Possible development strategies for market entry are described, together with data on possible acquisition targets.

The report contains 100 pages, including 35 exhibits.

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Introduction

Introduction

A Objective and Scope

This report was prepared specifically for Martin Marietta Data Systems and is confidential to it. The objective of the study was to identify a number of possible development strategies for Martin Marietta Data Systems (hereafter referred to as MMDS) within Western Europe.

The study concentrates on an evaluation of the possible level of opportunity available to MMDS in France and West Germany. It should be noted that the United Kingdom has been specifically excluded from this study. In addition, MMDS requested that INPUT also provide commentary on the likely opportunity in some other areas: Italy, the Benelux, Spain and the Scandinavian countries.

The scope of the market development opportunity discussed in this report has been limited to the following:

- Professional services associated with information systems, in particular systems integration
- Facilities management (or operations management) where this is associated with large-scale project development or could be considered as an entree to the systems integration market

B Methodology

The methodology used for the preparation of this study was based upon desk research. The investigations and findings are based upon an evaluation of information and data about the Western European information systems business available as a result of INPUT's continuous and ongoing research programmes in Europe.

INPUT met with Mr. Bob Jefferson and Mr. Steve Thompson towards the middle of September (13.9.88) in order to establish as fully as possible an understanding of MMDS's areas of specialisation and strengths and to discuss any other relevant and significant business factors concerning the study. INPUT extends its thanks to Mr. Jefferson and Mr. Thompson for their help and guidance in the preparation of this study.

C
Report Structure

The remaining chapters of this report are organised as follows:

- Chapter II is an Executive Overview, which provides a concise summary of the entire report.
- Chapter III provides a broad overview of the Western European information systems market situation, including market size and growth projections.
- Chapter IV gives INPUT's understanding of MMDS's capabilities, interests and objectives in relation to the Western European information systems market.
- Chapter V describes the Western European opportunity relevant to MMDS's interests. The opportunity is analysed in terms of the industry sector markets of professional services, systems integration and facilities management.
- Chapter VI analyses the evidence of the existence of a systems integration market in France, West Germany and other country markets of interest to MMDS.
- Chapter VII addresses some important strategic issues for consideration by MMDS. It assesses customer attitudes in Western Europe that are relevant to MMDS. How those opportunities might best be identified, the competitive market position and the business potential for MMDS are also discussed.
- Chapter VIII provides INPUT's considered evaluation of the strategies that MMDS might use to penetrate the Western European information systems market.
- The Appendix contains INPUT's proposal for this study.

Executive Overview

Executive Overview

A
The MMDS Opportunity in Europe

The European information services market represents a substantial opportunity. In total, the market is estimated, by INPUT, to exceed $100 billion by 1993—for comparative purposes, the U.S. market is forecast, by INPUT, to reach $175 billion by 1993. These and other key points described here are listed in Exhibit II-1.

For MMDS, the key question is: What part of that market can be addressed given MMDS's particular set of capabilities and interests? INPUT's understanding of the strengths and competitive advantages of MMDS predetermines the area of focus to be systems integration and any closely related supportive markets, e.g. facilities management.

The European opportunity for systems integration is indeed substantial—INPUT estimates that this market is currently (1988) worth over $1 billion and is expected to reach $5 billion by 1993.

Within that market, the most substantial section is manufacturing, particularly process manufacturing. Other sectors of importance, like banking and finance and retail/distribution, will offer opportunities but on a more restricted basis.

From a cross-industry perspective, application maintenance is considered an important and significant opportunity. The pressure on large organisations, to cope with the growing burden of existing application maintenance and to develop new data base management and communications capabilities that allow them to be fully integrated into the growing data processing environment, represents an opportunity.

EXHIBIT II-1

Whilst the systems integration market can be seen developing throughout Europe, it is naturally the large 'blue-chip' organisations that represent the most significant opportunity. From a geographical perspective, it is INPUT's understanding that the two countries of highest immediate interest are France and West Germany. They represent approximately 60% of the total European SI opportunity. However, some consideration of other country markets is probably necessary to establish a true pan-European and multinational presence.

Penetration of the European market raises a number of strategic considerations apart from the choice of market entry strategy and investment considerations. These include:

- The most appropriate approaches towards European customers. A key conclusion here is the need to come to the market with a very clear,

unique offering (product or service) that is needed by European companies.

- The competition. This singularity of the offering should also stand the test of vendor differentiation against both local European and U.S. vendors competing in these markets.

- Opportunity identification. What is the most effective modus operandi for exploiting these opportunities—stratagems proposed are high-level sales approaches, public relations (prestige 'show case' visits) and consultancy.

- Assessing the potential. However attractive the overall market size might appear to be, how much of that could MMDS realistically expect to capture? INPUT considers MMDS (on the assumption of the preparedness to commit sufficient resources) well able to become a substantial player in this market and achieve at least a 2-3% projected market share and between $80M and $120M annual revenues by 1993. A 5% market share would imply annual revenues of $200M.

In seeking to exploit the potential business opportunity in European commercial systems integration, MMDS can consider a number of strategic options that can be categorised as:

- Set up a completely new business
- Acquire an existing business
- Joint ventures

The way forward for MMDS to implement its entry into Europe can only be proposed in broad terms in this report. However, possible actions that would support of any of the strategies listed above can be suggested, and these would include:

- Setting up a European professional services vendor liaison function with the dual aims of gaining first-hand market knowledge and experience and of positioning the company to participate in opportunities that might not otherwise be realised.

- Forming an acquisition/partnership team to seek out possible subcontractors and/or acquisition targets. Initially, smaller consultancies could be targeted, with larger professional services firms considered as a second step.

- Setting up a consultancy practice that, though operated in Europe, would be supported from the United States and that would provide a platform upon which project-oriented work could be developed.

- Developing a public relations initiative, unlikely to include advertising, but utilising press articles placed in such journals as the *Financial Times*, *Les Echos* and *Handelsblatt*. Initiatives, such as sponsored and controlled MMDS events designed to capture the interest and imagination of senior executives, could also be included.

Clearly the ideal is to take a 'big' contract at the start as the basis for developing the business, but this possibility cannot be considered as the basis of a firm plan. Certainly it will not be found unless looked for, aggressively pursued and properly funded. INPUT believes that a combination of these approaches can open up Western European systems integration market as a very real opportunity for MMDS.

Growing the business to achieve at least a 2-3% market share level, and certainly a 5% level, would depend to a great extent on the possibility of making the 'right' acquisitions or joint venture agreements. Both France and West Germany present certain difficulties in this respect, and MMDS may wish to reconsider evaluating the U.K. as another country of entry.

B

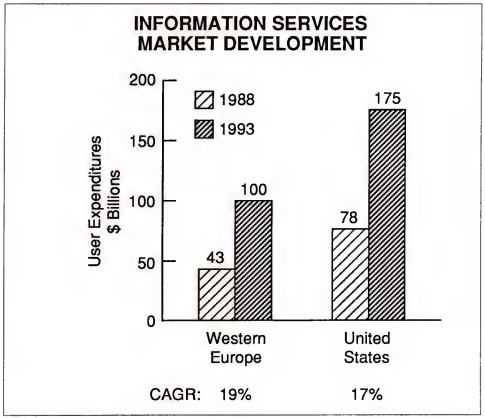
The Western European Information Services Market

INPUT segments the information services market into six broad groups:

- Processing services
- Network services
- Turnkey systems
- Software products
- Systems integration
- Professional services

INPUT has assessed this total market as $43 billion in 1988 and has forecast it to grow at a compound annual growth rate (CAGR) of 19% to reach $100 billion dollars by 1993. In contrast, the U.S. market, assessed at $78 billion in 1988, is forecast to grow at a CAGR of 17% to reach $175 billion by 1993. See Exhibit II-2.

EXHIBIT II-2



Nearly three-quarters of the Western European market is accounted for by the four largest economies, West Germany, France, the United Kingdom and Italy. France represents the largest share of the total market (26%), with West Germany accounting for 18%, the United Kingdom 17%, and Italy 12%. The Scandinavian countries represent a further 10% of the total market and the Benelux countries 8%.

The most important characteristic of the Western European market is its non-integral nature, particularly in comparison with the United States. Western Europe is a collection of individual countries, each with its own special and distinctive characteristics. An understanding of and adaptation to these characteristics will remain an important requirement for success despite the 1992 'single market' initiative of the European community. The specific implications of this initiative for the information services industry are currently being researched by INPUT, and it intends to publish a report in early-1989 to report on these findings.

Perhaps one of the most significant characteristics of the information services marketplace today (no doubt partly influenced by the 1992 initiative) is the high level of merger and acquisition activity. This has

particularly been the case amongst the large professional services companies, the most significant groupings being:

- Cap Gemini Sogeti taking over SESA in France and Data Logic in Sweden
- Systems Designers taking over Scicon
- Sema Metra and CAP Group merging to form the SEMA Group

There have been few significant acquisitions of European companies by U.S.-based vendors. Of significance has been EDS's entry into Europe through the purchase of Unilever Computer Services Ltd. (UCSL) and Societe pour l'Informatique (SPI), a subsidiary of the Pechiney Group. More recently, NYNEX bought BIS, a large U.K.-based professional services and software vendor.

The competitive environment in the Western European market is typified by the following principal characteristics:

- Relatively few large- or medium-sized vendors but a very large number of small (less than $5M annual revenue) companies
- The fact that most companies operate largely within their own national frontiers except for the larger organisations or U.S.-owned vendors
- The significant service revenues generated by the equipment vendors, particularly IBM, Unisys, Siemens, Nixdorf and Digital

C

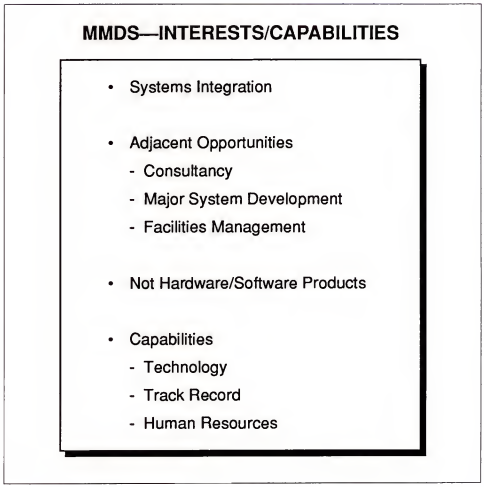
MMDS—Interests/ Capabilities

In assessing the possibility of entering the Western European market place, it is vital to make an objective assessment of:

- The MMDS span of interests in respect of Europe
- The capabilities profile that is relevant to those interests.

The key points are listed in Exhibit II-3. It is INPUT's understanding that MMDS considers Western Europe an important market for possible entry and further, that MMDS's span of interest is specifically limited to the professional services sector. No interest exists in the areas of processing services, network services, software products and turnkey and hardware systems.

EXHIBIT II-3



In considering the particular area of systems integration, it is important to appreciate the relevance of adjacent service markets, in particular:

- Facilities management
- Consultancy

Any professional service that can be developed or is supportive to systems integration work is understood, by INPUT, to be relevant to this study.

INPUT's understanding of MMDS capabilities can be summarised in the following statements:

- High-tech information systems capability within the defence/aerospace sector

- A company with a track record, size and professional standing to fully participate in and take responsibility for very large-scale project development
- A rich resource of skilled personnel in all aspects of planning, developing, implementing and operating major, highly complex computer and communications network systems
- A depth of human resources with knowledge and experience of advanced technologies

D

The Commercial Systems Integration Opportunity

Having established a prima facie case for both the potential of systems integration as an important market in Europe and MMDS's interest and technical/managerial/commercial competence to address that market, the next step is to investigate and analyse the nature of that potential.

Exhibit II-4 shows INPUT's current estimate and forecast for the commercial systems integration market for Western Europe. The commercial systems integration market should be considered as part of the wider opportunity presented by the adjacent markets of professional services and facilities management. The sheer size of the professional services market makes it an area of high interest; INPUT estimates that from a total of nearly $13 billion in 1988, it should grow at a compound annual rate of approximately 20% to reach $32 billion by 1993.

EXHIBIT II-4

THE COMMERCIAL SYSTEMS INTEGRATION OPPORTUNITY

Country	Market Estimate 1988	1993	CAGR (Percent)
West Germany	265	1,000	30
France	240	950	32
United Kingdom	275	980	29
Italy	105	420	32
Rest of Europe	235	770	27
Total Western Europe	1,120	4,120	30

The professional services market comprises the activities of information systems consultancy, custom software development, education and training services and the provision of personnel to noncomputer installations. High growth in this sector continues to be driven by:

- Growing information systems needs
- Shortages of skilled staff
- Growing complexity in the design and development of information systems

Staff shortages may be a potential problem for professional services firms, and initiatives to tap new sources of labour—women, older people and off-shore sources—may have to be utilised. The demographic curve indicates increasing shortages of young people in the future.

Traditionally, a very fragmented market, a number of key changes have taken place over the last couple of years which have radically altered the face of the industry. These can be summarised as:

- The emergence of large European owned multinationals, e.g. Cap Gemini Sogeti, SD-Scicon and the SEMA Group

- The impact of the Big Eight accounting firms in the professional services business, notably Andersen Consulting

- The increasing involvement of the hardware vendors in the provision of professional services

These trends mirror to some extent the changes that have taken place in the advertising and management consultancy business, where global scale has become an important factor. The concept of being able to offer professional services locally to major world-scale organisations, but from within an integrated international operation, may be an important consideration for MMDS.

Facilities management has not been as popular a concept in Europe as it has been in the United States market. However, there are signs of increasing interest in this form of service particularly when allied to other services—for example systems development. Certainly, both EDS and Andersen Consulting are pushing very hard in this area.

It is thus from these adjacent market areas—consultancy, system development and facilities management—that opportunities can be developed within the specific area of systems integration.

E
Major Country Markets

It was quite clear from Exhibit II-4 that the most significant country market opportunities for SI examined in this study exist in France and West Germany. However, each country in Europe has its own characteristics that make it essential to examine the market in detail on a country-by-country basis. Exhibit II-5 identifies the key characteristics of the major country markets.

Some significant features of the French market that must be clearly understood are:

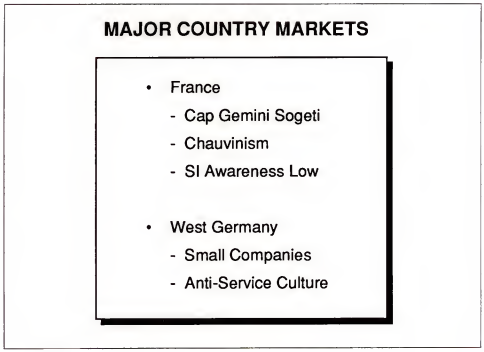
- The dominance of the local national companies that operate in France and also on an international scale. The most notable example being Cap Gemini Sogeti (CGS), in effect, the jewel in the crown of the French industry. CGS now owns SESA, the leading French systems integration contractor.

- The chauvinism of the French people, and in particular the tendency of the French Government and civil service to choose local suppliers.

- The relative level of unawareness of systems integration as a concept in the commercial sector.

These factors lead to the conclusion that entry into France needs very special handling, and it is important to note that from a legal standpoint, all business must be conducted in the French language.

EXHIBIT II-5



Some significant features of the West German market are:

- In distinction to France there are few, if any, really large professional services companies.

- West Germany is a nation invested with an 'anti-service' culture and regulatory environment. In consequence the 'meine aber kleine' concept implies a solid tradition of doing everything possible in-house and only seeking an outside service solution as the last possible resort.

- Related to the above is the phenomenon of large industrial companies taking significant shareholdings in software and services companies (e.g., AEG in GEI) to secure control over subcontractors.

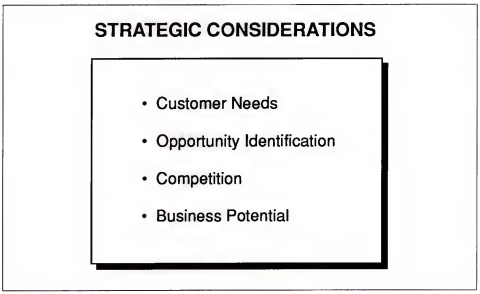
Nevertheless, it has to be recognised that West Germany represents the most advanced, largest and richest economy in Europe, with a very highly skilled and well-trained workforce. West Germany is renowned,

for example, for its many small, but highly specialised, engineering consultancies.

F
Strategic Considerations

Four important strategic considerations for MMDS are customer needs, the identification of opportunities, the strength of competition and the assessment of business potential (Exhibit II-6).

EXHIBIT II-6



The general user awareness of systems integration as a concept is low in Western Europe; the user is often a manager or executive with specific responsibilities other than information systems. Otherwise, the characteristics of European users are not considered to be particularly unique, in comparison with, for example, the United States market. There does generally exist in Europe a greater reluctance to go outside the organisation for information systems development than in the United States. However, the fundamental trend towards large-scale system integration contracts is considered to be generic to the advanced economics.

Commercial systems integration opportunities have to be created rather than just identified. The projects cited in this report indicate that these opportunities do exist, and that executives with general management responsibility who need solutions to business problems that imply complex system development are increasingly turning to outside contractors.

The most significant areas of systems integration activity in the Western European market have been identified in the areas of communications, process control and materials control. In terms of industry sectors,

banking and finance, manufacturing and transportation appear to have generated most activity. The development of contracts for administrative systems are generally stymied by the difficulty of defining the requirements precisely enough to allow the engagement of an outside contractor. An important area where opportunities are expected to develop is system modernisation—the updating and technological refreshment of ageing, difficult-to-maintain systems with inaccessible data files.

The development of the commercial systems integration market in Western Europe has drawn into competition three broad categories of vendors:

- Professional services firms
- Computer hardware vendors
- Electronic/electrical engineering companies

Professional services firms have developed their software development expertise and project management skills towards the systems integration opportunity. Leading firms in this area include Cap Gemini Sogeti, SESA, SD-Scicon, Logica and the Sema Group.

Computer hardware vendors are being driven by user demand to become more involved with the applications and their implementation. The integration of multivendor hardware and different proprietary architectures is also an important factor. Leading vendors in this category are IBM, Unisys, Digital and ICL.

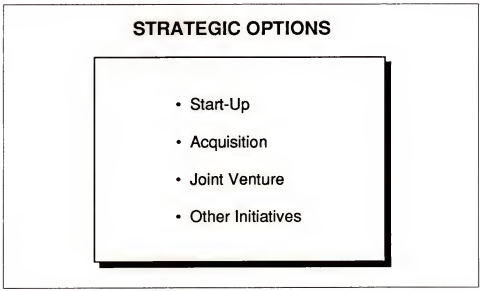
Electronic and electrical engineering companies, including manufacturers of telecommunications equipment, have been drawn into the market through the increasing convergence of technologies. Important examples of systems integration vendors in this category include Siemens, Ferranti, Philips, Mannesman and Racal.

G Strategic Options

In seeking to participate in the Western European systems integration opportunity, MMDS can consider a number of strategic options (Exhibit II-7). These can be categorised as:

- Set up a completely new business
- Acquire an existing business
- Joint ventures

EXHIBIT II-7



Setting up a completely new business can be a practical proposition since it is possible to create a business on the basis of a major contract award. The Saatchi-and-Saatchi-backed Information Consulting Group (ICG) is an example of an attempt to build a business from a standing start. It is probably more realistic to consider this option through the development of a more generally aimed professional services business, particularly in view of the relative sizes of these markets.

Key benefits of this approach are primarily the maintenance of independence and the avoidance of the risk involved in acquisitions or joint ventures. The downsides concern the possibility of not being able to build the business quickly enough in terms of either orders or human resources.

An acquisition strategy could take two approaches: acquisition of an existing SI business or of a related business (for example a professional services firm). The Western European business scene is currently very active in mergers and acquisitions; INPUT estimates that over 100 took place within the information services industry during 1988.

Within the professional services sector, there has been considerable concentration resulting from Cap Gemini Sogeti's acquisitions of SESA in France and Data Logic in Sweden, Systems Designers' acquisition of Scicon, and the merger of SEMA METRA and CAP Group PLC. Interestingly, there have been few acquisitions by U.S.-based organisations of European vendors. The most significant examples have been:

- EDS's acquisition of UCSL (Unilever Computer Services Ltd) in the U.K. and SPI (Societe pour l'Informatique) in France

- NYNEX's acquisition of BIS in the U.K.

Clearly, an acquisition achieves an instant presence in a target market with local nationals. However, the acquirer is faced with certain risks related to the value and price of the acquisition and the retention of the human assets. An important strategic factor is the size of the targeted company. In both France and West Germany, there exists only a limited number of professional services companies of medium size (i.e., in the range of $20-$100 M annual revenues).

Joint ventures represent another possible strategic option to MMDS. These are often formed specifically to bid for very large projects, although more generally aimed initiatives have also been created—for example by IBM and SESA in France and Olivetti and EDS in Italy.

Whilst joint ventures can appear very attractive from the perspective of risk reduction, there exists also a dilution of control and financial contribution. Additionally, vendors entering such arrangements must strive to ensure that it is they and not their partners who gain the most knowledge and experience from the endeavour.

As a first step forward in establishing a position, or at least to gain intimate first-hand knowledge, in the various national market environments, MMDS can consider some other initiatives. Possible actions for consideration by MMDS would include:

- Setting up a European professional services vendor liaison function
- Forming an acquisition/partnership team
- Setting up a consultancy practice within Europe
- Developing a public relations initiative

Information Services Market Overview

Information Services Market Overview

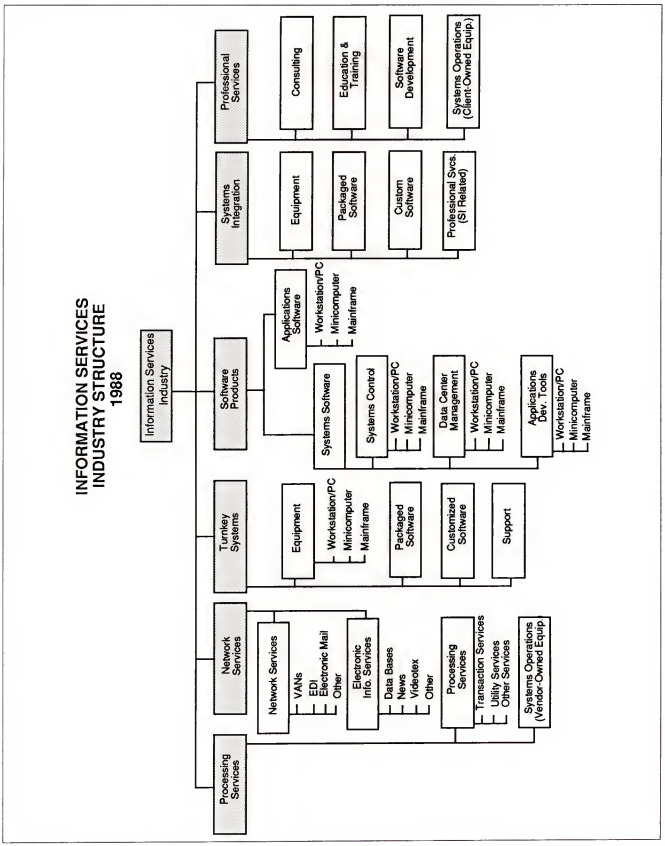
The purpose of this chapter is to provide MMDS with a background perspective on the total information services market in Western Europe. Later chapters focus on the areas defined as having specific interest for MMDS. The structure of the chapter is organised as follows:

- INPUT's industry definitions are summarised and background data provided.
- INPUT's market assessment and five-year forecasts are given for the entire market and analysed by major sector and country.
- Important characteristics of the market are described.
- Leading competitors in the European market are identified.
- A comparison of the overall market with that of the United States is given.

A Definitions and Economic Data

INPUT analyses the information services markets into six broad groups, including systems integration and professional services; a schematic is provided as Exhibit III-1. A detailed description of each sector and subsector can be found in INPUT issue reports already subscribed to by MMDS, for example, *The Western European Market for Information Services—Analysis and Forecasts 1987-1992.*

EXHIBIT III-1



It should be noted that in this report and previous INPUT reports, the systems integration and network services sectors were not shown separately but were included as subsectors of professional services and processing services, respectively.

Exhibits III-2 through III-4 provide basic background economic data and forecasts on the countries of Western Europe. Exhibit III-2 provides comparative economic data on the countries of Western Europe including population, Gross Domestic Product and the structure of the economy by principal area of activity. Exhibit III-3 shows expected GNP growth for each country for the period 1987 to 1993, and Exhibit III-4 forecasts of inflation through to 1993. Exhibit III-5 lists the U.S. dollar conversion rates used by INPUT for its forecast consolidation. All INPUT's forecasts are made in local currency and are calculated at current rates for each year; therefore, they include allowances for inflation. The exchange rates used (as shown in Exhibit III-5) are the average of those pertaining on July 1st 1988.

EXHIBIT III-2

WESTERN EUROPEAN COUNTRIES— BASIC ECONOMIC DATA

Country	Population (Million)	Population Growth (Percent P.A. 1977-1987)	GDP (£ Billions)	GDP per Capita (£)	1987 Percent GDP Distribution		
					Agr.	Ind.	Serv.
Austria	7.6	0.1	72	9,474	5	43	52
Belgium	9.9	0.0	85	8,586	2	33	65
Denmark	5.1	0.1	62	12,187	5	24	71
Finland	4.9	0.4	54	11,020	6	35	59
France	55.6	0.5	533	9,586	4	38	58
Germany	61.1	0.0	683	11,178	2	42	56
Greece	10.0	0.7	29	2,900	14	30	56
Ireland	3.6	0.9	18	5,000	11	25	64
Italy	57.3	0.3	457	7,975	4	34	62
Netherlands	14.7	0.5	131	8,912	4	34	62
Norway	4.2	0.3	51	12,143	4	43	53
Portugal	10.2	0.5	22	2,157	9	40	51
Spain	38.7	0.7	175	4,522	7	35	58
Sweden	8.4	0.2	97	11,548	4	36	60
Switzerland	6.6	0.4	104	15,757	NA	NA	NA
United Kingdom	56.8	0.1	403	7,095	2	36	62
EEC	323.4	0.3	2,602	8,045	-	-	-

Source: National Westminster Bank, September 1988.

EXHIBIT III-3

GNP GROWTH FORECASTS

Country	GNP Growth (Percent)			
	1987	1988	1989	1989-1993
Austria	1.3	1.5	1.5	2.0
Belgium	1.8	1.7	1.2	1.8
Denmark	-0.9	0.0	0.5	1.7
Finland	3.6	2.8	2.2	2.4
France	2.2	2.6	2.1	2.2
Germany	1.7	2.8	2.4	2.2
Greece	-0.5	1.5	1.5	2.5
Ireland	2.0	0.0	1.0	2.0
Italy	3.1	2.3	2.1	2.4
Netherlands	2.5	1.5	1.2	1.8
Norway	1.6	0.5	1.2	1.8
Portugal	5.1	4.0	3.5	3.5
Spain	5.2	4.2	3.5	3.0
Sweden	2.8	2.0	1.5	1.9
Switzerland	2.5	1.8	1.5	1.7
United Kingdom	4.2	3.5	2.3	2.7
EEC	2.7	2.7	2.2	2.4
Western Europe	2.6	2.6	2.1	2.3

Source: National Westminster Bank, September 1988.

EXHIBIT III-4

INFLATION RATE FORECASTS

Country	Consumer Prices (Percent)			
	1987	1988	1989	1989-1993
Austria	1.4	2.0	3.0	3.4
Belgium	1.6	1.2	2.5	3.6
Denmark	4.0	5.0	5.0	5.8
Finland	3.7	5.5	5.0	5.8
France	3.3	2.8	3.5	4.3
Germany	0.4	1.2	2.0	2.4
Greece	16.4	14.0	13.0	13.0
Ireland	3.2	2.5	3.5	4.7
Italy	4.7	5.0	6.0	6.4
Netherlands	-0.5	0.8	2.0	3.4
Norway	8.7	7.5	6.7	6.8
Portugal	9.4	8.5	6.5	8.0
Spain	5.3	4.5	4.0	4.0
Sweden	4.2	6.0	6.0	6.8
Switzerland	1.4	2.0	2.3	2.4
United Kingdom	4.1	4.7	5.3	5.1
EEC	3.1	3.3	4.0	4.4
Western Europe	3.1	3.4	4.0	4.5

Source: National Westminster Bank, September 1988.

EXHIBIT III-5

U.S. DOLLAR EXCHANGE RATES

COUNTRY	CURRENCY	DOLLAR EXCHANGE RATE
France	FF	6.13
West Germany	DM	1.82
United Kingdom	£	0.59
Italy	Lira	1,351.60
Netherlands	Dfl	2.05
Belgium	BF	38.10
Sweden	SK	6.29
Denmark	DK	6.91
Norway	NK	6.66
Finland	FM	4.34
Switzerland	SF	1.51
Austria	Sch	12.81
Ireland	IR£	0.68
Spain	Pta	121.40

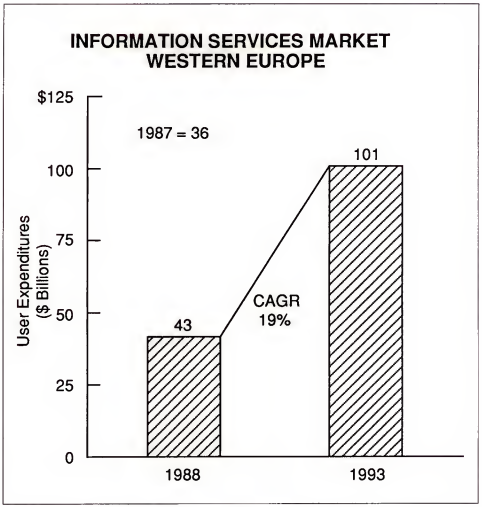
Source: Swiss Bank (1 July 1988 rates)

B

Market Forecasts, 1988-1993

As shown in Exhibit III-6, INPUT forecasts that the overall information services market in Western Europe will grow from around $43 billion in 1988 to an expected level of $101 billion by 1993. This represents a forecast compound annual growth rate of 19%. An analysis of the total market by sector is shown in Exhibit III-7. It should be noted that this exhibit shows the complete systems integration sector, of which commercial systems integration is a component.

EXHIBIT III-6



This sectoral analysis clearly indicates INPUT's analysis of the major growth opportunities, namely:

- The systems integration sector with forecast annual growth of 26% to represent 5% of the total market by 1993. (In comparison it is estimated to account for only just under 4% of the 1988 market.)
- The network services sector with forecast annual growth of 28%.

EXHIBIT III-7

INFORMATION SERVICES BY SECTOR— WESTERN EUROPE

Subsector	Market Forecast ($ Millions) 1987	1988	1988-1993 CAGR (Percent)	1993
Processing Services	6,810	7,310	6	9,640
Network Services	890	1,250	28	4,280
Software Products	9,420	11,710	22	31,360
Professional Services	10,450	12,810	20	32,090
Systems Integration	1,270	1,600	26	5,170
Turnkey Systems	6,860	8,180	17	18,230
Total	35,700	42,860	19	100,720

Exhibit III-8 shows the analysis of the total information services market by major country and country group. It can be seen that France represents the largest individual country market followed by West Germany in second place and the United Kingdom in third. Percentage shares of the 1988 market are as follows.

- France 25%
- West Germany 20%
- United Kingdom 18%
- Italy 11%
- Scandinavia 10%
- Benelux 8%
- Rest of Europe 8%

EXHIBIT III-8

INFORMATION SERVICES BY COUNTRY— WESTERN EUROPE

Country	Market Forecast ($ Millions) 1987	1988	1988-1993 CAGR (Percent)	1993
France	8,890	10,600	18	24,490
West Germany	7,040	8,400	18	19,040
United Kingdom	6,330	7,650	19	18,610
Italy	3,960	4,840	21	12,360
Sweden	1,210	1,440	18	3,220
Denmark	890	1,060	18	2,380
Norway	720	840	16	1,760
Finland	650	780	18	1,770
Netherlands	1,910	2,290	17	5,080
Belgium	1,060	1,280	18	2,910
Spain	930	1,140	23	3,180
Switzerland	1,210	1,450	18	3,270
Austria	580	690	18	1,580
Rest of Europe	320	400	21	1,040
Total	35,700	42,860	19	100,690

C
Market Characteristics

1. General

Perhaps the most important characteristic of the Western European market is its non-integral nature in comparison with the United States. It is important to understand the individual characteristics of each separate country market and to adapt marketing and commercial policies appropriately. This will remain an overriding requirement for success despite the 1992 'single market' initiative of the European Community.

However, beneath the level of national characteristics, disparate business attitudes and organisational approaches, the fundamental driving forces for the acceptance of information systems and services remain the same. These feature the universal need for business efficiency and the competitive pressure to have more immediate data on operations as markets become more global—forces that are familiar on a world scale.

The only major inhibitor on industry progress in Western Europe is (major economic recession apart) a growing shortage of trained people, particularly young people. This could have a serious impact on the professional services sector by the mid-1990s. The greater use of computer-assisted software engineering (CASE) tools and methodologies, combined with the utilisation of 'off-shore' human resources (e.g., from India), immigration and the use of more older people and women, are possible ameliorating factors.

These factors apart, there are two key market characteristics that are particularly relevant to this study:

- The movement towards an integrated market by 1992
- The current level of merger and acquisition activity

These two issues are to some extent related, since it is thought that a number of the larger merger and acquisition initiatives have been motivated, at least partly, by a desire to achieve a pan-European market position in anticipation of the challenge of a 'unified' European market.

This report does not discuss in any depth the implications of the '1992' initiative. INPUT has instigated research into the impact of 'a single market concept' on the information services business in Western Europe and intends to publish a report in 1989 to report on these findings.

At this stage, it is possibly worth sounding a note of caution, as it is not clear that the initiatives being formulated will have a tremendous impact

on the market size or its growth. It does, however, potentially impact the expected level of competition within the market. The merger and acquisition activity within the industry is a clear signal of that trend.

2. Mergers and Acquisitions

1987 and 1988 have seen intense merger and acquisition activity in the European information services industry. The most significant international developments in this area are listed in Exhibit III-9.

IMPORTANT MERGERS AND ACQUISITIONS IN EUROPE, 1987-1988

Company 1	1987 Revenues ($ Millions)	Company 2	1987 Revenues ($ Millions)
Cap Gemini Sogeti	680	Data Logic	25
Systems Designers	130	Scicon	295
Sema Metra	236	CAP Group	172
Tietotehdas	108	Datema	82
Cap Gemini Sogeti	-	SESA	192

Europe's largest information services company, Cap Gemini Sogeti, acquired the Swedish company, Data Logic, early in 1988. This resulted in Cap Gemini almost doubling its revenues in Sweden. It follows a number of other foreign purchases in 1987, the most important being Ibat (West Germany) and Ge-Da (Italy). Of particular significance to the area of systems integration is the intended absorption of SESA, the large French systems integration contractor into Cap Gemini Sogeti.

In March 1988, Systems Designers took over Scicon, the BP professional services company subsidiary in an £80 million deal. Scicon was the larger of the two companies and had significant revenues outside of the

U.K. mainly in West Germany (SCS) and France (GFI). The new company, SD-Scicon, is a significant player in the European market.

The French company, Sema Metra, merged with CAP Group of the U.K. around the same time to form the Sema Group. These two companies were leading vendors in their own countries, and together form a major European force. In addition to having significant revenues in France and the U.K., the Sema Group also has sizeable subsidiaries in Spain, The Netherlands and Belgium.

In late-1987, Sweden's biggest information services vendor, Datema, was bought by the leading Finnish company, Tietotehdas. Both of them had revenues in the region of $80 million in 1987. The new company is easily the biggest Scandinavian information services vendor and one of the leading ones in Europe.

This major restructuring, amongst some of the largest organisations in the business, is only one aspect of the phenomenon. Merger and acquisition activity has also taken place amongst many much smaller organisations. In total, INPUT estimates that during 1987 there were some 70 merger and acquisition deals concluded in Europe, and in 1988 it is estimated that the number will reach well over 100.

This activity is interpreted as being largely driven by the following factors:

- The realisation that business ('1992' apart) is becoming increasingly global; consequently there is a need to provide multinational support. This was the prime motivation for the mergers and acquisitions listed in Exhibit III-9.

- The high growth rate and profit potential of information services companies has proven attractive to organisations operating in less favourable environments.

- The critical nature and possible shortage, of scarce information skills has motivated some organisations to secure an interest in information services companies, e.g., British Aerospace in SD-Scicon, BMW in Softlab and Plessey in Hoskyns.

- Ambition on the part of smaller organisations to grow more rapidly than would otherwise be possible and thus to escape a niche or boutique identity.

In addition, a very relevant and important factor has also been the interest of U.S.-based organisations to establish themselves within the Western European environment.

Notable examples are:

- NYNEX's purchase of BIS (U.K.)
- CTG's purchase of Shubrook Associates (U.K.)
- EDS's acquisition of UCSL (U.K.) and SPI (France)

D

Competition

The Western European market contains a large number of participants, within any one country market, vying for the available business. In reality, the high growth overall (around the 20% level historically) has enabled most companies to achieve strong growth despite the high apparent level of competition.

Naturally, the level of competition varies, depending upon the particular characteristics of a sector. For example, the global nature of network services implies the participation of only a limited number of players at the higher levels. Systems integration is also an example of a market that will have a restricted number of possible participants.

Exhibit III-10 lists the top vendor rankings and market shares for the total Western European information services market. Exhibits III-11 and III-12 list respectively the top vendor rankings in France and West Germany.

E

Comparison with the United States

Exhibit III-13 and III-14 illustrate a comparison between the U.S. market and the European market both in terms of a historical trend and as forecast growth.

EXHIBIT III-10

TOP VENDOR RANKINGS AND MARKET SHARES WESTERN EUROPE INFORMATION SERVICES VENDORS, 1987

Rank	Company	Market Share (Percent)	Estimated Revenues ($ Millions)
1	IBM	7.8	2,800
2	Unisys	1.7	590
3	Cap Gemini Sogeti	1.5	525
4	Siemens	1.3	479
5	Finsiel	1.2	415
6	Reuters	1.1	400
7	Nixdorf	1.1	375
8	Transpac	1.0	355
9	Digital	0.8	293
10	Olivetti	0.8	285
11	Datev	0.7	245
12	Sligos	0.6	225
13	GSI	0.6	210
14	McDonnell Douglas	0.6	200
15	Scicon	0.6	200
16	Volmac	0.6	200
17	Sema Metra	0.5	195
18	CISI	0.5	190
19	Arthur Andersen	0.5	180
20	Computervision	0.5	180
21	Computer Associates	0.5	170
22	ICL	0.5	165
23	Telesystemes	0.4	155
24	Thorn Software	0.4	155
25	Bull	0.4	150
26	Microsoft	0.4	150
27	Logica	0.4	146
28	Hewlett-Packard	0.4	145
29	CCMC	0.4	140
30	Intergraph	0.4	135
	Others	71.8	25,647
	Total Market	100.0	35,700

EXHIBIT III-11

TOP VENDOR RANKINGS AND MARKET SHARES INFORMATION SERVICES, FRANCE INDEPENDENT VENDORS, 1987

Rank	Company	Market Share (Percent)	Estimated Revenues (FF Millions)
1	Transpac	3.9	2,185
2	Cap Gemini Sogeti	3.1	1,755
3	Sligos	2.4	1,340
4	GSI	1.7	960
5	Telesystemes	1.7	940
6	Cisi	1.6	920
7	CCMC	1.5	850
8	Sema Metra	1.3	710
9	SG2	1.2	690
10	Steria	1.0	550
11	GFI	0.8	455
12	Sodinforg	0.8	445
13	CGI	0.8	440
14	Syseca	0.8	440
15	Asystel	0.8	420
16	SITB	0.7	380
17	Sopra	0.7	380
18	Segin	0.6	320
19	Arthur Andersen	0.6	310
20	Sinorg	0.5	305
21	TITN	0.5	300
22	Computer Associates	0.5	295
23	CDFI	0.5	288
24	CMG	0.5	285
25	Thom 6	05.	285
26	Unilog	0.5	272
27	McDonnell Douglas	0.5	267
28	IBSI	0.5	263
29	Sodetag TAI	0.5	260
30	DATAID	0.5	259
	Others	66.3	36,951
	Total Market	100.0	54,520

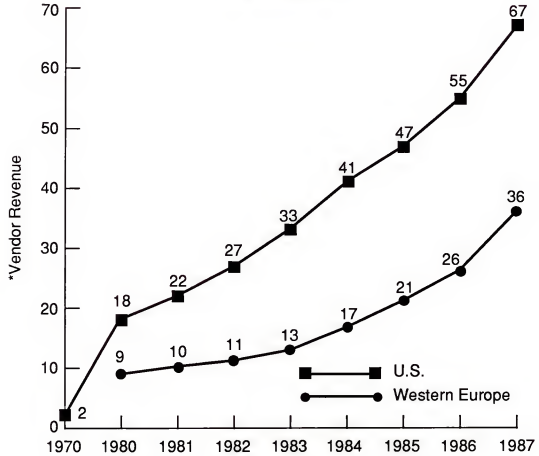
EXHIBIT III-12

TOP VENDOR RANKINGS AND MARKET SHARES INFORMATION SERVICES WEST GERMANY, 1987

Rank	Company	Market Share (Percent)	Estimated Revenues (DM Millions)
1	Datev	3.5	453
2	Fiducia	1.5	190
3	IBM INS	1.2	150
4	SCS	1.1	145
5	Computervision	1.1	140
6	GEI	1.0	132
7	EDV Ploenzke	0.9	120
8	SAP	0.9	112
9	Intergraph	0.8	100
10	ADV/Orga	0.7	87
11	Softlab	0.7	85
12	Krupp Atlas	0.6	80
13	Software AG	0.6	80
14	Dat Gruppe	0.6	76
15	Cap Gemini/SESA	0.6	72
16	MBP	0.5	69
17	Straessle	0.5	66
18	Taylorix	0.5	64
19	IKOSS	0.5	60
20	Computer Associates	0.5	59
21	Microsoft	0.4	54
22	AC Automation Center	0.4	50
23	Alldata	0.4	48
24	DVO	0.4	48
25	PSI	0.4	47
26	GMO	0.4	45
27	Matthiesen	0.4	45
28	PDV	0.4	45
29	Mummert & Partner	0.3	43
30	Integrata	0.3	42
	Others	78.1	10,000
	Total Market	100.0	12,810

EXHIBIT III-13

REVENUE GROWTH IN THE INFORMATION SERVICES INDUSTRY, 1970-1986 ($ Billions)



*Note: Definition changes and dollar exchange rate differences (notably between 1986 and 1987) have slightly affected gross market sizes on a year-to-year basis.

EXHIBIT III-14

COMPARISON OF U.S. AND WESTERN EUROPEAN INFORMATION SERVICES MARKET DEVELOPMENT, 1987-1993

Subsector		Market Forecast ($ Billions) 1987	1988	1988-1993 CAGR (Percent)	1993
Processing Services	U.S.	16.5	18.6	12	32.4
	W.E.	6.8	7.3	6	9.6
Network Services	U.S.	5.4	6.5	23	18.5
	W.E.	0.9	1.3	28	4.3
Software Products	U.S.	19.9	24.6	20	62.0
	W.E.	9.4	11.7	22	31.4
Professional Services	U.S.	12.6	14.3	16	30.2
	W.E.	10.5	12.8	20	32.1
Systems Integration	U.S.	3.4	4.8	25	14.6
	W.E.	1.3	1.6	26	5.1
Turnkey Systems	U.S.	8.7	9.7	10	15.8
	W.E.	6.9	8.2	17	18.2
Total	U.S.	67.0	78.0	17	175.0
	W.E.	35.7	42.9	19	100.7

MMDS Capabilities and Interests

MMDS Capabilities and Interests

This chapter describes INPUT's understanding of MMDS capabilities and strengths in respect to the purpose and intention of this study.

A Strategic Position

MMDS has positioned itself over the recent past, through the sale of non-strategic business and continued emphasis on its core business units, as an important competitor in the professional services and systems integration market. As a result of the sale of its majority shareholding in Hoskyns, MMDS currently operates only in the United States.

Within the United States market, MMDS derives significant levels of business from the Federal Government, both in the defence and civil sectors. Its parent company, the Martin Marietta Corporation, benefits it with a track record of systems integration capability in high-tech and very complex project environments. In particular, it represents a very strong capability in the manufacturing area, as evidenced by its 'paperless factory' project at Orlando, Florida.

MMDS is now intent on exploiting its systems integration capabilities within the growing opportunity of commercial systems integration. The development of that opportunity on a wider-scale geographically, in particular within Europe, is the subject of this study.

B Areas of Interest

It is INPUT's understanding that MMDS wishes to enter the European market for commercial systems integration services. Commercial systems integration is considered to include the markets for civil government projects but to exclude defence-related work, even if for administrative systems.

It should also be specifically stated that MMDS is understood to have no interest in entering the European markets for either hardware services or package software products.

In assessing MMDS's central interest as commercial systems integration it is, nevertheless, understood that this implies a related interest is adjacent markets. In particular these can be defined as the markets for:

- Facilities management
- Consultancy
- System development

It is considered that each one of these separate markets may contain opportunities that are related to, or more importantly, can lead to the development of systems integration business.

Within this definition of market interests, MMDS's more specific interests will be largely determined by its current areas of expertise and experience, and these are listed in section C below.

C
MMDS Strengths

The MMDS strengths that are key to a consideration of its opportunities in the systems integration and related markets in Western Europe can be summarised as:

- Complex system project management
- The integration of complex multivendor hardware and software systems
- Capability to design and develop specialised hardware/software solutions to meet specific client needs.
- High level of expertise in providing systems management for plant operation and manufacturing processes.
- Depth of technical resources, knowledge and experience of advanced technologies

European Professional Services Opportunities

European Professional Services Opportunities

MMDS's interest in the professional services and systems integration sectors has been clearly established in Chapter IV above. This chapter examines these market sectors in Europe and the adjacent market of facilities management under the following headings:

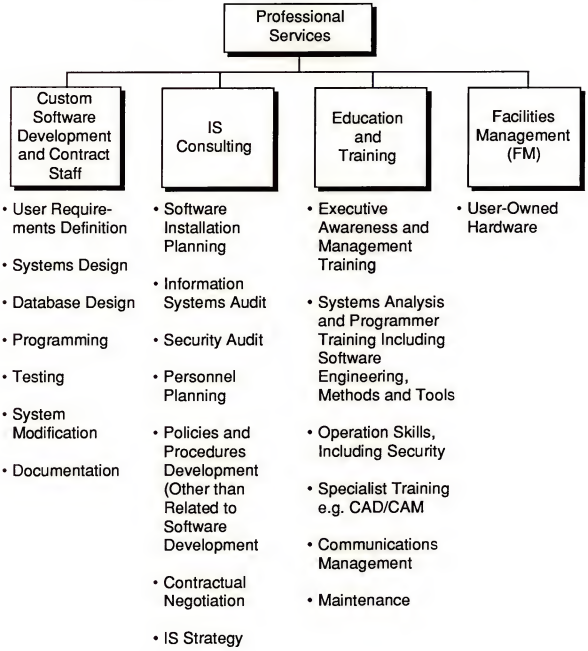
- Professional services. The areas of consultancy and software development are discussed.
- Systems integration.
- Facilities management.

A Professional Services

Professional services is defined by INPUT as consisting of all those computer-related services consisting solely of the provision of human resources. The market structure is shown in Exhibit V-1.

EXHIBIT V-1

PROFESSIONAL SERVICES MARKET STRUCTURE



The professional services market in Western Europe has provided outstanding growth opportunities over the last few years and is forecast by INPUT to continue to do so over the next five years. Major driving forces of that growth continue to be:

- The pressure on user organisations to meet growing information systems needs, whilst continuing to manage existing applications
- The problems of attracting and retaining trained data processing staff
- Adapting to more complex and integrated technical environments for computer systems, for example, organizing corporate database systems using relational software technology and fully utilising communications systems

On the downside, however, the general threat of staff shortage may begin to hit professional services firms in Europe fairly seriously over the next five years. Although the situation varies to some extent from country to country, there exists a looming demographic crisis in respect to the number of young people coming on to the job market. It is a particularly acute problem for West Germany and the U.K., but not such a problem in France.

The impact of this, on professional services firms, is likely to force them to expand their workforces from other sections of the population. As very significant recruiters of graduates, these firms may well have to switch their emphasis to re-training older people and recruiting more women workers and to consider the utilisation of 'off-shore' resources.

The shortage of potential recruits and the inevitable increasing cost of people will place more pressure on the utilisation of software development methodologies and tools, in order to achieve economies of operation.

The demographic problem in Europe could be of particular interest to MMDS, since it supports the thesis that the market can support new entrants, particularly if they can export some professional services work from their home base or develop other off-shore sources of manpower services as mentioned above.

Exhibits V-2 and V-3 show INPUT's market assessment for the professional services sector in Western Europe. Exhibit V-2 shows the analysis of the total market by sector. It should be noted that the facilities management (FM) sector included here is purely for the professional services

segment of that market. This is defined as the provision of facilities management services on equipment owned by the user. Where the vendor owns the equipment, FM is defined as a processing service. The FM market in total is described in more detail in Section C below.

EXHIBIT V-2

PROFESSIONAL SERVICES MARKET FORECAST WESTERN EUROPE, 1988-1993

	Market Forecast ($ Millions)			
Subsector	1987	1988	1988-1993 CAGR (Percent)	1993
IS Consultancy	1,280	1,580	22	4,210
Custom Software Development	7,930	9,720	20	24,260
Education and Training	1,145	1,390	19	3,320
Facilities Management	95	120	21	300
Total	10,450	12,810	20	32,090

Exhibit V-3 shows the country market analysis for the total Western European professional services market. It can be seen that France, as in the total information services market, represents the largest share in the professional services market, with the United Kingdom being the second largest market. Percentage shares of the total market for 1988 are assessed as follows:

- France 30%
- United Kingdom 19%
- West Germany 16%
- Italy 10%
- Benelux 9%
- Scandinavia 8%
- Rest of Europe 8%

EXHIBIT V-3

PROFESSIONAL SERVICES
COMPARATIVE COUNTRY MARKETS

Country	Market Forecast ($ Millions) 1987	1988	1988-1993 CAGR (Percent)	1993
France	3,119	3,811	20	9,490
West Germany	1,677	2,036	19	4,830
United Kingdom	2,034	2,492	20	6,310
Italy	1,055	1,320	23	3,690
Sweden	320	394	19	960
Denmark	219	270	20	660
Norway	178	215	18	500
Finland	163	202	20	500
Netherlands	600	731	19	1,720
Belgium	323	396	19	950
Spain	238	300	24	880
Switzerland	306	374	19	900
Austria	142	172	19	410
Rest of Europe	79	99	23	280
Total	10,450	12,810	20	32,080

Exhibit V-4 provides a list of the leading professional services companies active in the Western European marketplace. Traditionally, a very fragmented market, a number of key changes have taken place over the last couple of years that have radically altered the face of the industry. These can be summarised as follows:

- The emergence of a number of large 'European' groups that operate on an international basis, notably, CGS, SD-Scicon and the Sema Group. This is a phenomenon already referred to in Chapter III.
- The arrival in force of the Big Eight accounting firms as important players in the market. The most notable example, of course, is Andersen Consulting.

EXHIBIT V-4

LEADING PROFESSIONAL SERVICES COMPANIES IN WESTERN EUROPE

Vendor	Country of Origin
Cap Gemini Sogeti	France
Finsiel	Italy
Sema Group	France/U.K.
SD-Scicon	U.K.
Andersen Consulting	U.S.A.
Logica	U.K.
SESA (Owned by CGS)	France
Volmac	Netherlands
CISI	France
Steria	France
SG2	France

- The interest and activity in the marketplace by the hardware manufacturers as they find it increasingly necessary to provide additional support and service functions in order to market their hardware products.

These trends mirror to some extent the changes that have taken place in the advertising and management consultancy areas where globalisation has become of considerable significance. It is interesting, for example, to note Saatchi and Saatchi's interest in the computer professional services market. (Note their involvement in the newly formed Information Consulting Group.)

This indicates an important consideration for MMDS—the establishment of market positioning within Europe. There appears to be sound business logic behind the concept of being able to offer professional services locally, but from within an integrated international operation, to major world-scale Fortune-500-type companies.

1. Consultancy

From Exhibit V-2 it can be seen that the overall Western European market for consultancy services is assessed at $1.6 billion in 1988, and is forecast to reach $4.2 billion by 1993. Exhibit V-5 shows the country analysis of this market.

Consultancy is potentially a business stream that can be developed to open up opportunities in related markets, in particular large custom system development and system integration projects. Within the list of leading professional services companies in Western Europe (see Exhibit V-4) there are four companies that place considerable reliance on this form of market penetration:

- Sema Group
- Andersen Consulting
- Logica
- SESA

The Sema Group (recently formed from the merger of the U.K.-based CAP Group and the French owned Sema-Metra) derives its consultancy business from a long-standing presence in the market. In particular, Sema-Metra was originally founded as a management consultancy firm and attained at one time a reputation in France equal to that of the McKinsey group. Today, they still generate revenues from management consultancy and have an interest in the work study consultants Metra-Proudfoot.

EXHIBIT V-5

WESTERN EUROPEAN CONSULTANCY MARKET— COUNTRY/GROUP ANALYSIS

Country/ Group	Market Forecast ($ Millions) 1987	1988	1988-1993 CAGR (Percent)	1993
France	335	415	22	1,140
West Germany	200	245	21	640
United Kingdom	270	340	20	850
Italy	140	175	24	505
Scandinavia	105	125	21	325
Benelux	100	120	21	310
Rest of Europe	130	160	22	440
Total	1,280	1,580	22	4,210

Other examples exist of organisations that develop system development contracts out of consultancy and study assignments acquired through their consultancy business. Logica and Sesa are clear examples of this. Sesa, which could perhaps be described as France's leading system integration company, derives around 5% of its total revenues from consultancy assignments.

2. Custom System Development

Custom system development represents by far the largest element (73% in 1988) of the total professional services market. Fundamentally it can

be considered for the purposes of this report as comprising three significant elements:

- Contract staff
- Small and medium projects
- Large projects

The areas of contract staff and small- and medium-project development are not areas of prime interest for MMDS. However the third area, large project developments, is of considerable significance since it can be considered to represent the platform from which commercial systems integration business can be developed. In particular, it is the area from which administrative systems integration projects can be developed. For example, Andersen Consulting is clearly attempting to develop its systems integration business in Europe from this base.

It is also likely that major 'modernisation' contracts for information systems will develop from this market sector. Opportunities are clearly emerging for professional services firms to develop and maintain existing 'user developed' application systems. The FI Group, a relatively small ($25M annual revenue—1988) professional services firm in the U.K., claims to derive around 30% of its revenue from this kind of activity.

Cap Gemini Sogeti has also derived business from software systems related to the maintenance and development of existing systems. Using its conversion methodology 'Expert - Conversion', it has won contracts for major conversions—for example for IBM users upgrading to MVS. The Banque de Bretagne and the insurance company CARDIF are examples of clients for this type of contract. The contracts have involved CGS in taking complete responsibility for training, monitoring, data processing centre management, organisation, systems architecture etc.

Exhibit V-6 shows the country group analysis for the custom system development and contract staff sector of the Western European professional services market.

EXHIBIT IV-6

WESTERN EUROPEAN CUSTOM SYSTEM DEVELOPMENT AND CONTRACT STAFF MARKET— COUNTRY/GROUP ANALYSIS

Country/ Group	Market Forecast ($ Millions) 1987	1988	1988-1993 CAGR (Percent)	1993
France	2,495	3,045	19	7,510
West Germany	1,170	1,420	19	3,360
United Kingdom	1,515	1,860	20	4,525
Italy	820	1,020	23	2,840
Scandinavia	620	780	21	2,040
Benelux	620	775	20	1,945
Rest of Europe	690	820	20	2,040
Total	7,930	9,720	20	24,260

B

Systems Integration

Exhibit V-7 provides INPUT's current estimate of the Western European commercial systems integration market and the five-year forecast growth. Exhibit V-8 shows the structure in Europe of the total systems integration market. The commercial sector includes local but excludes central government which is shown separately, as is the defence sector. Exhibits V-9 includes INPUT's estimates of the U.S. systems integration market assessment for comparative purposes.

EXHIBIT V-7

WESTERN EUROPEAN COMMERCIAL SYSTEMS INTEGRATION— COUNTRY ANALYSIS

Country/ Group	Market Forecast ($ Millions) 1988	1993	1988-1993 CAGR (Percent)
France	240	950	32
West Germany	265	1,000	30
United Kingdom	275	980	29
Italy	105	420	32
Benelux	85	280	27
Scandinavia	60	190	28
Rest of Europe	95	305	29
Total (rounded)	1,120	4,120	30

EXHIBIT V-8

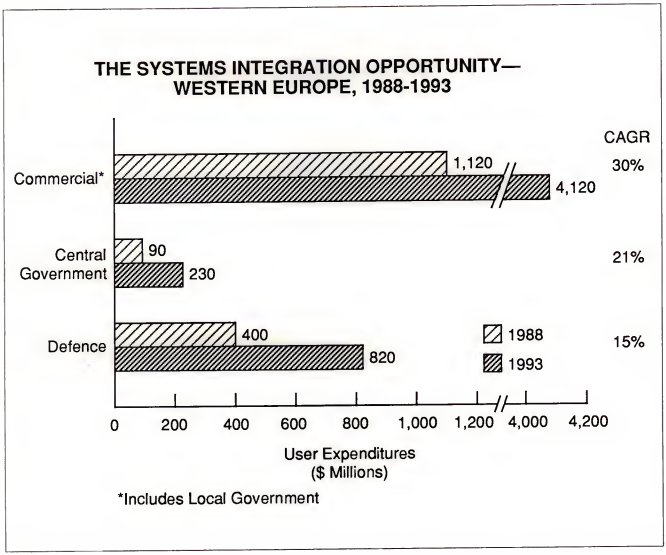

THE SYSTEMS INTEGRATION OPPORTUNITY—
WESTERN EUROPE, 1988-1993
CAGR
Commercial*
1,120
4,120
30%
Central Government
90
230
21%
Defence
400
820
15%
1988
1993
0
200
400
600
800
1,000
1,200
4,000
4,200
User Expenditures
($ Millions)
*Includes Local Government

EXHIBIT V-9

SYSTEMS INTEGRATION— WESTERN EUROPEAN/U.S.A. COMPARISON

Market	User Expenditures 1988 ($ Billions)	1993 ($ Billions)	CAGR (Percent)
Commercial			
Western Europe	1.1	4.1	30
U.S.A.	2.3	8.9	31
Government			
Western Europe	0.5	1.0	15
U.S.A.	2.5	5.7	18
Total			
Western Europe	1.6	5.1	26
U.S.A.	4.8	14.6	25

Exhibit V-10 shows an analysis of the European commercial systems integration market by vertical market sector.

EXHIBIT V-10

WESTERN EUROPEAN COMMERCIAL SI MARKET— VERTICAL ANALYSIS, 1988

Vertical Sector	1988 Market Estimate
Manufacturing	380
Banking and Finance	245
Telecommunications	125
Utilities	65
Transportation	50
Local Government	110
Other Industry	145
Total	1,120

C

Facilities Management

Exhibit V-11 shows the total facilities management market for the three major country markets of France, West Germany and Italy.

1. France

France is the leading supplier of FM services in Europe. This parallels that country's leadership of of both the processing services and the overall computing services markets.

However, France's FM sector is forecast to grow at a moderate 16% per annum over the period 1988-1993 due to a lack of marketing thrust in the direction of FM and the falling cost of processing services revenues in the competitive situation created by the success of videotex and the policy of 'telematique'.

EXHIBIT V-11

MARKET FORECAST FOR FACILITIES MANAGEMENT IN WESTERN EUROPE

Market Subsector		Millions of Monetary Units (Rounded) 1987	1988	1993	1988-1993 CAGR (Percent)
France	Local Currency MMF	730	855	1,760	16
	$ Millions	120	140	285	
Italy	Local Currency BL	95	112	245	17
	$ Millions	70	83	180	
West Germany	Local Currency MDM	75	87	170	14
	$ Millions	40	48	93	

French vendors exhibit a traditional view of FM as a market, but are currently looking for new ways in which to market the concept. The concept of FM as highly allied to systems integration, has to date, only really been taken up by EDS in France. There is as yet no clear evidence that they have succeeded in importing this concept into France.

Telesystems is the leading supplier to the sector but is not really fully competitive, as it obtains semi-tied contracts with France Telecom.

INPUT believes that the important active firms in the French market are:

- SG.2
- GFI
- Sogeris
- EDS
- Sligos

2. West Germany

The West German FM market remains the most difficult one to work in. The major reasons contributing to this situation are:

- West German users are highly orientated towards an 'in-house' solution to IS requirements and always have been.

- West German management seems strangely suspicious of letting control of information processing fall outside its own sphere.

- West Germany does not enjoy a cheap data communications environment, or a liberal one, and this reduces the outside contractor's ability to include an effective networking capability into its FM offering. This can be a vital component of a modern FM capability.

- As the manufacturing heart of the European economy, West Germany's economic and business climate is at the opposite end of the spectrum from the service orientation of the U.K. and France.

3. Italy

The Italian FM sector is the second in importance in Europe to France. It is characterised by a high number of low-value contracts issued to small companies for services by local computer bureaux and professional services vendors.

These contracts result from the practice of hiring systems staff from outside companies on a long-term basis in situations when management does not intend to employ professionals on its permanent staff. The equipment component of these deals is low, hence their low value overall. This segment is forecast to decline in importance, with only single-figure growth rates predicted.

At the top end of the market, public sector bodies are prevented by certain administrative practices particular to the country from employing in-house systems and programming development staff. This has fostered the continuation of a handful of long-term contracts for government, both central and local. This is seen as the medium-term opportunity area for the major national computing services vendors.

Companies active in the sector are believed by INPUT to be:

- Italsiel
- Enidata
- Data Management
- Olinet (ex Ge-Da)
- Seva
- Datamont
- Sopin
- Geis

Country Market Opportunities

Country Market Opportunities

A France

INPUT has estimated that the commercial systems integration market in France is currently of the order of $240M; a forecasted compound annual growth rate (CAGR) of 32% is estimated to take the market to $950M by 1993. The systems integration projects identified in France are referenced below by vertical market sector.

1. The Manufacturing Sector

INPUT has identified six manufacturing sector projects that can be classified within the systems integration sector and these are described below.

VITTEL - Le Societe Generale des Eaux de Vittel, a major water bottling organisation commissioned SESA to carry out a pilot study for an automatic computer controlled plant control project.

MICHELIN - The major European tyre manufacturer installed a materials handling system valued at $2M, for the computer system and its development. It is understood that STERIA, a leading French professional services company had project responsibility.

RHONE-POULENC - A leading French chemicals company implemented an automatic filling and packaging system, which was completed in August 1986. The total project was valued at about $3M of which about $1.5M represented the software development and computer equipment investment.

ST-GOBAIN - As a large process manufacturing organisation it has invested regularly in production line modernisation. Two projects identi-

fied were a glass production line control system completed in September 1986 which in total represented an investment of $6.5M. The systems integrator was not identified. Another project valued in total at over $20M was for a continuous quality control system in a paper processing plant. The information systems content of the contract was believed to be $2M and again the system integrator was not identified.

GROUPE-BULL - The indigenous French computer manufacturer contracted SESA to carry out an optimization study for the computerization of a spare parts warehouse. The contract was awarded in late 1987 and is estimated to total around $1M.

2. The Banking and Finance Sector

BANK OF FRANCE - SESA was awarded the prime contract for development of an inter-bank clearing by the Bank of France in 1985 (Systeme Interbancaire de Telecompensation). The project was completed in the course of 1988. An important aspect of the project was SESA's SETH.25 ciphering system designed to guarantee authentication, integrity and confidentiality of all data transmitted on the network. The project is estimated to have been worth $25M.

PARIS BOURSE - The Paris stock exchange also adopted the same network structure as that for the Bank of France and this represented a $5M contract again for SESA.

CREDIT LYONNAIS - SESA developed for this financial institution a DPS-25-based network which was completed at the end of 1987. Project value estimated at $3M.

SOCIETE GENERALE - SESA was again the systems integrator for a DPS-25-based videotex network. The project was estimated at $5M and is understood to have been completed in 1986.

CREDIT-AGRICOLE - Cap Gemini Sogeti developed two compatible management information systems for the UNIMAT and UNIFERGIE subsidiaries of this major bank. The systems provided services for the management of hire purchase contracts and the contract, estimated to be worth $4M, was awarded in 1986.

CITIBANK - The Paris branch, based on IBM mainframe systems, is currently contracting a marketing and mortgage administration system (vendor unspecified) valued in total at $8M.

SICOVAM - Arthur Andersen was awarded a major system development contract, worth initially at least $5M, for the design and implementation of settlement systems for the Paris Bourse, of which Sicovam is the clearinghouse organisation.

3. The Telecommunications Sector

This sector has been dominated, and still is, by the French initiatives in videotex. The MINITEL videotex systems have become widely accepted in France for both business and leisure/entertainment purposes. France Telecom's implementation of telecommunication infrastructure has resulted in very large contracts being awarded to develop the TRANSPAC packet-switched network and the electronic telephone directory (annuaire electronique).

TRANSPAC - SESA was prime contractor for the development of this network for the PTT (France Telecom). Initiated at the end of the 1970s and first operational in the early 1980's, it has subsequently been expanded considerably.

ANNUAIRE ELECTRONIQUE - SESA and Cap Gemini Sogeti in the form of a GIE (Groupement d'Interest Economique) have undertaken prime responsibility for both the original project and its subsequent upgrades. INPUT estimates that this has generated revenues for these two organisations that have averaged $40M per year throughout the decade.

FRANCE TELECOM - SESA has also developed, in conjunction with Crouzet, a manufacturer of terminals and telephone equipment, systems for credit-card-based services. This project is understood to have represented revenues of around $5M over the period 1986 through to 1988.

4. The Utilities Sector

This sector in France consists fundamentally of EDF (Electricite de France) and GDF (Gaz de France). A number of systems integration contracts have been placed by EDF with SESA, and CGI has implemented an energy management system for EDF.

EDF - SESA designed and produced the data acquisition systems used at the national and regional dispatching centres for the monitoring and operation of the electricity network. The computers are connected to each other via a packet-switched network which harmonises and controls

the exchange. The remote management system is responsible on a national level for overall grid and production site monitoring. EDF and SESA have worked together on this for 10 years. INPUT estimates that this has represented project revenues of $5M per year during the 1980s for SESA.

EDF have also contracted with SESA for an access control management system for France's nuclear power stations.

EDF - Electricite de France awarded CGI, a large French software and professional services company, a $10M contract for the installation of an energy management system.

5. The Transportation Sector

In respect of the systems integration market, this section is largely concerned with such organisations as SNCF, RAPT (the Paris urban transport authority with responsibility for the Metro), Air France and other airline and airport management organisations. Additionally, the French interests in the Eurotunnel project have been included in this sector.

RAPT - SESA was awarded a contract estimated at $3M for the development of a rolling stock management communications system. The contract commenced in mid-1987.

RAPT - SESA also implemented for RAPT during 1986 and 1987 a signal resolution system and maintenance message distribution network. Project value is estimated at over $1M. Additionally, SESA is prime contractor for a project to modernise the transport coupon production system for the RER section of RATP's responsibilities.

SNCF - The French national railways organisation has contracted SESA for a ticket control system to be initially implemented at a limited number of stations up to the end of 1988. Project value is estimated at $4M.

Aeroports de Paris - ADP, the Paris airports authority has contracted with Cap Gemini Sogeli for a videotex passenger information network to be developed and installed. Contract value is estimated at $1M.

AMADEUS - The Amadeus airline consortium awarded IBM a contract worth in total some $100M including all computer hardware, communications equipment, applications software as well as full implementation

services. This contract is split between France, West Germany and Spain.

6. The Civil Government Sector

As in other European countries, there appears to exist considerable reluctance to contract out major project responsibility to third-party organisations. Unlike the U.K., where statements of intention to contract major projects have been made, INPUT does not expect the French Government, particularly the current Socialist one, to follow this path deliberately. Nevertheless, the French civil government administration is certainly willing to provide substantial contracts to service organisations, and it is of course, subject to the same cost and manpower pressures that are a feature of the current environment.

In consequence, there is evidence of substantial civil government contracts that are classified as systems integration for the purposes of this study.

Two examples identified are:

- Home Office - SOPRA, a middle-sized French professional services company, was awarded a $3M contract to develop administrative systems for the French Home Office.

- Bureau de Postes - Cap Gemini Sogeti has a contract to design and implement office procedure systems for the French Post Office.

7. Other Sectors

Other sectors not covered in the previous subsections include distribution, both wholesale and retail, agriculture, mining and oil and gas extraction.

BUT-International - SESA has implementated a networked management system for this chain of retail shops in France. The value of the contract is estimated to be greater than $1M but is not known precisely.

B

West Germany

INPUT has estimated that the commercial systems integration market in West Germany reached around $265M in 1988 and is expected to grow at a compound annual growth rate (CAGR) of 30% to reach $1,000M by 1993. The systems integration projects identified in West Germany are referenced below by vertical market sector.

1. The Manufacturing Sector

West Germany represents the manufacturing heartland of Europe and consequently it is not surprising that a considerable number of systems integration contracts have been identified. Unlike France (and also the United Kingdom) a number of these are in the discrete manufacturing sector, notably the automobile industry.

VOLKSWAGEN - The West German automobile manufacturer has awarded a $1M contract to Cap Gemini Ibat to develop an estimation and information system for materials procurement. The project is to run on an IBM installation under MVS and IMS. The duration of the project is from August 1988 through to March 1989.

MAN - This West German manufacturer of commercial vehicles has contracted SCS (the West German subsidiary of SD-Scicon) to implement a computer-controlled warehousing system.

PORSCHE - The West German sports car producer has awarded a number of contracts to systems integrators concerned with its design and production systems. EDS has been contracted to install and implement what is described as a CAD/CAM Data Centre. SCS has been awarded two contracts; one of these is to develop and implement a 'goods-in' quality control and monitoring system for a spare parts warehouse.

BMW - This Western German automobile manufacturer is known to have awarded two major system development contracts, one to SCS for a Car Examination System (Fault Reporting and Rectification) and one to SESA Deutschland for a Quality Assurance System.

VEGLIA - The large West German glass manufacturer awarded SCS a systems integration contract for the development and implementation of a process control system.

DEUTSCH SHELL - The West German organisation of the Anglo Dutch Shell Oil Group used SIEMENS as the prime contractor for a major computerised plant modernisation systems. The contract has been estimated as being worth $8M.

ROBERT BOSCH - Bosch is a large West German manufacturing group producing car components, white goods and many other products. It contracted for the installation of a flexible manufacturing system at one of its plants estimated to be worth $7M. The prime contractor is not known.

RHEIN METAL - Another large West German industrial group used a systems integration contractor to develop and install a complete rocket test and simulation laboratory. The contract value and vendor are both unknown.

NIXDORF -.The West German computer manufacturer contracted with SESA to build and implement a Software Development Environment to support its production of a PABX system.

JACOBS - A West German food manufacturer awarded SESA a contract for the design and implementation of a food processing control system.

FORD - It is known that major contracts have been awarded by FORD EUROPE for the design and development of advanced manufacturing control systems. LOGICA and SD-Scicon are both known to have been contracted for developments in this area, many of which are to be implemented in Ford's West German plant's manufacturing control systems.

ALBER HANDTMANN GmbH - A process manufacturer in Biteroch has recently completed a sales administration project valued at $1M to an unnamed outside contractor. Systems are based on Honeywell-Bull and Norsk Data equipment.

EBERSPACHER - Another process manufacturer, based in Esslinglin, is presently engaged in major system upgrades to support its R & D and administrative activities. Total expenditure is budgeted at $5.5M over a 4-to-5 year time span. Significant elements of this work will be contracted out.

2. The Banking and Finance Sector

The West German banking and finance sector is relatively small in comparison with other major advanced economies, although West Germany does have a number of very large insurance companies. However, some systems integration contracts have been identified, and these are listed below.

Loenberger-Bausparkasse, a medium-sized rural bank, awarded a contract (vendor unknown) for the development of an acquisition analysis system valued in excess of $1M. The system is to be based on an IBM 3090.

The Landes-Bausparkasse Kiel, another medium-sized provincial bank has contracted with SCS for the installation of a computerised branch network system.

An insurance company, the Allgemeine Rentenaustalt Lebens und Rentenseincherungs AG, has also awarded a major network systems development contract to SCS.

The COMMERZBANK has commissioned SESA Deutschland to build a computer network for its foreign subsidiaries and its head office in Frankfurt.

3. The Telecommunications Sector

The PTT authority in West Germany the Deutsche Bundespost (DBP), has recently announced that it will split off the telecommunications part under the name TELEKOM. Considerable investment is planned over the next few years, as in other Western European countries, to introduce new voice and data telecommunications services. Some known contracts are referenced below.

Deutsche Bundespost has selected Racal as prime contractor for the TEMEX network, a new system providing a range of services for the 30 million telephone subscribers throughout Germany. The initial contract is worth some $17 million, out of a $70 million total contract, deliveries starting in December 1988. TEMEX uses 'data-over-voice' techniques, superimposing computer data signals onto existing telephone lines without interfering with normal voice calls. The Dr. Neuhaus Group is the subcontractor that will develop specialised software required for the system.

Siemens has been awarded a contract by Telekom to expand its packet-switching system. The contract is expected to generate revenues of around $65M in total over a five-year period from 1989. Previous installations were contracted with Northern Telecom.

Of historical interest is the contract placed by DBP at the beginning of the decade with IBM for the development of the West German Public videotex system, BILDSCHIRMTEXT. This contract, conservatively valued at least at $80M to IBM, was a problem for the contractor for a number of years. Cost overuns and development schedule delays were experienced.

It is also interesting to note that SIEMENS has recently been awarded a $63M contract to update and enhance West Germany's packet-switched network. The original installation of the system was contracted with Northern Telecom at a time when Siemens was unable to demonstrate that it had developed the necessary technology.

4. Utilities Sector

Some systems integration contracts have been identified in the West German utilities sector. SCS is known to have a systems integration contract with Gasvessorgung Suddeutschland GmbH, a gas utility, and Mannesman-Kienzle has a major system implementation for the German Water Resources Agency.

Additionally, the $800M Bewag electricity generation and KWV Nuclear Power projects are thought to have created certain other systems integration possibilities.

5. The Transportation Sector

An example of a systems integration contract in the transportation sector is that of the one awarded to Logica to develop a computerised container system for BREMER LAGERHAUS-GESELLSCHAFT, the operating company for the ports of Bremen and Bremerhaven. The contract is estimated to be worth $2M.

Additionally, a considerable portion of the Amadeus Airline consortium contract with IBM, previously mentioned in the French transportation sector, will be implemented in West Germany and can therefore be classified in this sector.

6. The Civil Government Sector

The German Labour office based in Nuremberg is computerising 90 local labour exchanges with a system to be implemented by Nixdorf. The contract, worth in total about $175 million, will include computer systems from Nixdorf's Targon/32 product line which run under UNIX. Installation is due to be complete by 1990. The systems will support job placement and counselling activities.

7. Other Sectors

As for France, other sectors not covered in the previous subsections are distribution, wholesale and retail, agriculture, mining and oil and gas extraction. INPUT has identified some systems integration contracts in the retail sector, and these are referred to below.

Olivetti is prime contractor (with software development subcontracted to Logica) for the development of a complete supermarket checkout system.

The end client not known. The project was awarded during 1986 for completion by 1988.

Mobil, Aral and BP have all placed contracts with Mannesman Kienzle for the development of petrol-station checkout systems.

Hertie GmbH, a retail distribution firm based in Frankfurt running Nixdorf and IBM mainframes, contracted out a considerable part of the development of a comprehensive sales analysis system. The contractor is unknown; the value of contract $2.5M.

C
Other European Countries

The purpose of this section is to provide some views on the development of the systems integration market in European countries other than France and Germany. As can be seen from the market overview provided in the previous chapter, INPUT has assessed the United Kingdom market as the largest individual country market in Western Europe. However, since the United Kingdom was given a low individual priority for the purposes of this particular report, no examples of projects are included here.

Of the four major economies in Western Europe, this leaves Italy to be discussed in this section along with the two major country groups of the Benelux and Scandinavia. Spain, although relatively small and undeveloped, is also included since it is considered to represent a significant growth opportunity.

1. Italy

The systems integration market in Italy is the most difficult of the major Western European country markets to evaluate. Its computer software and service market is the least developed of the major countries in overall terms, but this masks the contrast between the individual progress and economic vitality of the North and the relative economic stagnation of the South.

Italian business has been dominated by such organisations as IRI (the Initiative for Industrial Reconstruction) and the major industrial groups, Fiat, Olivetti, Ferruzi, etc., which have recently undergone considerable reorganisation.

At this stage of development, the Italian market for systems integration is manifested more by the presence of partnership organisations that appear

to have been created in order to exploit this form of commercial opportunity rather than by actual contracts, although some are quoted below. Some examples of these partnerships are:

- Olivetti and EDS have formed a company called SEVA, which will offer network services but which may also have the capability to implement communications networks.

- Digital and Fiat's COMAU subsidiary have formed a joint company, SESAM, to exploit opportunities in the area of factory automation.

- The SESIT consortium of ITALTEL, Telematica and SESA Italia has been formed to implement major communications network design and installation contracts.

Examples of systems integration contracts that can be cited include a number from the SESIT consortium as well as from Unisys. SESIT has built networks for Finsider, the interbank organisation SIP/SIA and a travel agents system. These latter two were for one of the public telephone authorities.

Unisys has made major installations (developed from the direction of their existing hardware business) that have implied a high degree of systems integration responsibility. Examples of these are:

- A dealing room system for the Savings Bank of Turin valued at $1.5 million

- A system for the FINCANTIERI shipyard worth $10 million

2. Benelux

A number of systems integration contracts have been identified in both Belgium and the Netherlands, and these are described below.

VESSEL TRAFFIC MANAGEMENT - Logica was awarded in March 1988 a $7.5 million contract to supply information processing system software for the vessel traffic management system that will control shipping and associated services along the Westerschelde estuary in the Netherlands leading to Antwerp harbour in Belgium. Logica's order is from Hollandse Signaalappassten which will supply all the computer and vendor equipment for the main contractor, Philips Nederland NV.

Riijkswatesstaat - The Dutch Water Authority, has given a $1.7 million contract for a distributed water quality monitoring and control system to SD-Scicon.

Koninklyke/Shell Laboratories, Amsterdam - Contracted with Ferranti for an advanced process management system valued at $4 million.

UNIGRO - Cap Gemini Sogeti is developing an integrated data processing and videotex system for the leading chain of retail food stores in Holland, UNIGRO. The system will integrate operations between point-of-sale terminals and central stock management. Facilities management services will be provided during the development of the system. The project is estimated to be worth $10 million. It commenced in 1985 and is estimated for completion during 1988.

The Dutch Ministry of Social Affairs and Employment has given Logica a contract for prime responsibility for developing a nationwide computer network to support the matching of vacancies with unemployed people.

Dutch PTT - Logica gained a systems integration contract to develop and install an X.400 based message handling system for customs declarations between the tax authorities and importers. The network is to be based on Logica's CPLEX .400 system kernel.

SABENA - The Belgian World Airlines has awarded Unisys a five-year $2.8 million contract to upgrade its production and test and development facilities.

3. Spain

Cap Gemini Sogeti and SESA, like most of the leading French professional services companies, are active in developing Spanish subsidiaries.

The organisations have benefitted from industrial development in Spain. For example SESA has installed a materials flow control system for Citroen's Spanish manufacturing facility and is believed to have a major contract concerned with developing communications infrastructure for the 1992 Olympic Games to be held in Barcelona.

The hardware manufacturers, notably IBM and Unisys, are also known to be active in this sector. The Spanish market is known to be the fastest-growing information systems marketplace within Western Europe. Given the undeveloped nature of the computer industry infrastructure in

Spain, and notably a lack of skilled manpower resources in-house, it is understood that considerable implementation responsibility has been taken up by the hardware vendors.

4. Scandinavia

Within the Scandinavian region, the following systems integration contracts are known.

DANISH SAVINGS BANK - Logica completed at the end of 1987 a $2 million contract to link a control data centre with the national branch network.

VOLVO - SD-Scicon was given responsibility for software development and integration for a robot supervisory system.

CIBA-GEIGY - EDS is known to have carried out some major systems implementations for this company in Sweden.

COPENHAGEN AND OSLO STOCK EXCHANGE - Logica was awarded two contracts to implement fault-tolerant hardware systems connected with PC dealer terminals for these two exchanges.

Norwegian PTT - Cap Gemini Sogeti has carried out major contracts for the development and implementation of videotex systems in Norway.

Svenska Penninglotteriet AB - The Swedish State Lottery contracted Logica to develop an IBM System/88-based system controlling 1,000 networked terminals and capable of handling 25 transactions per second.

Danish PTT - Logica was awarded, in the course of 1988, an estimated $20 million contract for development and installation of a 'total' post office system. Olivetti is to supply the terminals in a schedule which is planned to be completed in 1991.

Strategic Issues

Strategic Issues

In assessing the systems integration opportunity, one must evaluate a number of strategic considerations related to potential vendors and to potential purchasers of systems integration contracts. Essentially three key issues need to be evaluated by MMDS in approaching this market.

- Customer needs and solutions. Given the evidence (in Chapter VI) of large-scale contracts, what are the principal characteristics of European customer needs that determine or favour an SI solution?
- Opportunity identification. From a vendor standpoint, what are the means by which SI opportunities can be identified and sold, and what marketing methods can be utilised to optimize a vendor's awareness in the market and market positioning?
- Competition. What is the competitive environment in Western Europe for SI business? Who are the leading participants and how can they be classified?

A Customer Needs and Solutions

Despite the evidence of systems integration contracts awarded in the European countries, the concept of systems integration is not generally well accepted amongst the user community, particularly amongst information systems management. In short, the phenomenon of systems integration can be summarised as the response of users to specific computer and network system needs for which the in-house technical capability does not exist.

The user in this sense is often general management, which has targeted the need for a computer system or network to meet a very specific business or organisational requirement (for example, the development of a bank branch network or the automation of a warehouse). The interaction of digital computer technology (computing) with some other technology (e.g., communications, programmable control modules, etc.) generally ensures the necessity to seek specified skills that are not available in-house.

The characteristics of European users are, in respect of systems integration, not considered to be particularly different from those of U.S.-based users. There does, however, exist in Europe a greater reluctance to go outside for information systems development than is the case in the more service oriented U.S. business environment. The fundamentals of the trend towards large-scale systems integration contracts are considered by INPUT to be generic to the advanced industrialised economies.

Some insights into the attitudes of European users can be obtained from research conducted during 1988 by INPUT as part of its Market Analysis Programme Research for the Software and Services Industry. Part of this research focussed on the attitudes of users, both general management and information systems management, towards systems integration. The results of this research are fully described in INPUT's report *Commercial Systems Integration—Trends and Opportunities, 1988-1993*. Some extracts from this data are included in this section to convey the principal characteristics of the European user community.

In total some 100 senior general management and 100 information systems management personnel were interviewed throughout Europe. Significant characteristics of their attitudes and buying behaviour that emerged from this research can be classified into the following four main groups:

- The extent to which major contracts are subcontracted.
- The selection criteria applied to vendors by prospective purchasers of major systems projects.
- The main benefits perceived by users from using external contractors for major system development.
- Reasons for not using external contractors for major system development.

For both groups of managers, the level of major-project subcontracting followed an almost identical pattern. Both groups reported that 50% of their system development was conducted exclusively in-house, with around 40% involving some degree of subcontracted professional services.

The remaining 10% of contracts involved specific delegation of project management responsibility. For information systems management there was no recognition (or perhaps no willingness to recognize) the concept of the contractor taking total responsibility. In the case of general management nonrecognition was not the case; profile was:

- Project management subcontracted 7%
- Contractor took total responsibility 3%

The ratings of the selection criteria applied to potential professional services or systems integration contractors showed some differences between the two groups of managers. The most significant factors for general management, ordered by the level of importance attributed to them, were:

- Quality of technical staff
- Time and cost track record
- Legally binding performance guarantees
- System support capability
- Specialist knowledge of the industry sector
- Ability to assume total project responsibility
- Price level

In general, information systems managers placed a higher level of importance on the leading items in this list of selection criteria. They also placed a different emphasis on some of them, perhaps a realisation of the tendency for information systems management to be more involved with subcontracting at a more mundane level—e.g., for contract programmers. In particular:

- 'Time and cost track record' was placed as the most important criterion 'quality of technical staff' was in second place.

- Similarly, 'system support capability' was given a higher level of importance (marginally) than 'legally binding performance guarantees'.

Users' perceptions of the main benefits of using external contractors again showed some differences in attitude between the two groups interviewed, but in this case both groups gave similar levels of importance to the criteria.

The four most important benefits perceived by general management were considered to be:

- Reduction in the time taken to implement the system
- Avoidance of overstaffing on a medium-term basis, with the consequent necessity of contracting the head count
- Augmentation of the pool of in-house expertise
- Reduction of overall implementation costs

For the information systems group the most important benefit was perceived to be the access to expertise not available in-house; for the other criteria, the ordering remained the same as for the general management group.

It is also interesting to attempt to get some insight into the reasons why managers would not use external contractors for major projects. For both groups of managers the single most important reason given, not surprisingly, is that they already possess the required expertise in-house. For general management this was really the only significant factor. Loss of management control or other reasons such as cost and security were given very low ratings.

For information systems management two other factors did have greater significance: these were the company philosophy (perhaps a feeling that to goes outside contradicted information systems' own mission within the organisation) and loss of control. This latter factor again perhaps represents a threat to what management saw as its role and area of responsibility.

B
Opportunity Identification

Essentially it is INPUT's view that commercial systems integration opportunities in Europe have to be created rather than just identified. Whilst data processing projects will continue to be implemented in-house when the necessary technology skills exist there, opportunities increase when the contrary situation pertains.

It can also be interpreted from the analysis described in the previous section that general management, the most likely buying point for systems integration contracts, will be highly influenced by a need for relatively rapid implementation of data processing systems to meet business goals.

As has already been commented upon, the thrust of systems integration in Europe is coming from the interaction, and the consequent need for integration, between digital computer systems and other technology areas. Consequently one source for the identification of opportunities for systems integration contracts can be found through the vendors of equipment and services for these other technologies.

In Chapter VI were listed at length a number of examples of systems integration contracts. Exhibit VII-1 is an attempt to classify these in a matrix that identifies significant opportunity areas in Europe. It can readily be seen from this exhibit where the principal manifestations of systems integration in Western Europe have occurred to date.

Thus there exists an emphasis on process manufacturing rather than discrete manufacturing. This emphasis reflects relatively lower levels of investment in the discrete sector in comparison to the level of investment within the process sector. This emphasis is not observed in West Germany where investment in the discrete manufacturing sector is strong. Considerable demand for major systems development exists also in the banking and finance, and transportation sectors. The telecommunications sector is propelled by the high need of the telecommunications authorities (the PTTs) to bring new and competitive services to the market.

In terms of project types it is clear that the singular most critical technology that has spurred systems integration contracts is communications networks. Other significant areas are process control, materials handling systems and computer-aided manufacturing systems.

Quite clearly one area in which systems integration has not yet made inroads is administrative data processing. The exception is cases where some effectively standardised system is imposed—for example, on a branch network of geographically distributed offices for a Post Office or other such administrative body. In these cases the necessity to develop a relatively sophisticated communications network is also a significant consideration.

EXHIBIT VII-1

COMMERCIAL SYSTEMS INTEGRATION— OPPORTUNITY AREAS (Western Europe)

Vertical Market Sector	Project Type				
	Administrative/ Communica- tions Network	Communica- tions Network	Process Control	Materials Control	CAM
Manufacturing			**	*	*
Banking and Finance	*	**			
Telecommunications		**			
Utilities			**		
Transportation		**		*	
Local Government	**				
Other Sectors		*		*	

Key: *Indicates Some Activity
**Significant Activity

For much administrative data processing the problem remains defining clearly what systems are required in order that a contractor can reasonably quote for the work involved. A significant feature of all large computer projects, in distinction to a large civil engineering or construction project, is the reality that the system will need to evolve and adapt to the changing environment. Nevertheless the project design must be sufficiently well defined to enable the submission of firm quotations for

implementation. Clearly for many administrative systems this definition is still very difficult to achieve.

However, one area in which INPUT expects opportunities to develop is system modernisation. Many companies must impose order and accessibility upon what are effectively data processing 'slums'—old systems that are carried forward from previous generations of hardware, are processed individually, and have data that is not accessible. Organisations may well seek to award large contracts to services vendors that have the methodologies and tools to update and integrate these unconnected and technologically outdated systems. Organisations will then be able to concentrate their scarce in-house resources on the development of new and difficult-to-define systems.

The spate of merger and acquisition activity that is currently such a feature in Western Europe and that is likely to continue will also play a significant part in extending this particular systems integration opportunity. These acquisitions force organisations to integrate diverse proprietary architecture systems with new technology.

C
Competition

The nature of the development of the systems integration market in Western Europe has led to a variety of participating organisations. Each type was drawn into competition through the natural progression of its business mission. Consequently it is possible to analyse the competition into three broad classifications:

- Professional services vendors that have primarily brought to bear their software development expertise and computer project management skills

- Computer hardware vendors that are being driven by the market to become more involved with the customer's applications and their implementation. Another significant factor here is the increasing need to integrate multivendor systems and different proprietary architectures.

- Electronic and electrical engineering corporations, including manufacturers of telecommunications equipment that have been drawn into the market as digital computer systems, have increasingly converged on adjacent technologies.

1. Professional Services

Professional services vendors are companies that are primarily in the business of providing people skills. These skills can be grouped into consultancy, training and education, body shopping and project development. It is from this last area that systems integration activity has developed.

Leading organisations that are active in Western Europe in this category include:

- SESA
- CGS
- SD-Scicon/SCS
- Logica
- SEMA Group
- EDS
- Andersen Consulting
- SOPRA

2. Computer Equipment Vendors

IBM and Unisys are the major computer equipment vendors in this market. Other companies (e.g., Nixdorf and Kienzle) can be included because they have contracts that have been included within the overall market assessment. Olivetti was also mentioned in connection with a large supermarket system being installed in West Germany.

Apart from the companies above, other companies have made specific statements of intent to enter the commercial systems integration market; some (e.g., Digital) have carried out systems integration work in the defence sector.

These other companies intending to enter the market include:

- Digital
- Groupe Bull
- ICL

3. Electronic/Electrical Engineering Corporations

In most instances these organisations (e.g., Siemens) have significant involvement as computer hardware vendors as well. They are more

fairly classified in this area since in general it appears that their systems integration business is being generated from engineering divisions.

Important examples of this type of organisation are:

- Siemens
- Philips
- Racal
- Mannesman

Aerospace corporations can also be included within this sector for analysis purposes since de facto they are electronic engineering companies as well as airframe manufacturers. Naturally these organisations are very active in the defence sector and consequently it can be expected that they will become drawn into the commercial systems integration arena. Two items of interest here within the Western European market are:

- British Aerospace's 25% stockholding in SD-Scicon

- Grumman Data Systems' $40 million systems integration contract with Rolls Royce in the U.K.

Market Penetration Strategies

Market Penetration Strategies

This section reviews possible market penetration strategies that can be considered as possibilities by MMDS in Europe. The principal approaches can be categorised as follows:

- Development or expansion of an existing subsidiary or branch office located in Europe
- Development of a completely new commercial entity in Europe
- Acquisition of an existing business
- Entrance into some kind of commercial venture with one or a number of other organisations

Each of these approaches is discussed below and is illustrated where possible with appropriate examples. Since MMDS does not have an existing branch office or subsidiary in Europe, it is academic to discuss this approach. However, it should of course be bore in mind that the presence of subsidiaries or branch sales offices belonging to other parts of the Corporation will potentially help to overcome some initial start-up difficulties.

A New Development

1. General

Clearly, one of the options to be considered is that of the development of a completely new commercial entity. This is certainly a practical possibility in the field of systems integration. Large 'one-off' contracts

planned for fulfillment over several years can potentially be obtained by completely new companies provided that they fulfill such vital conditions as:

- Significant financial resources and/or backing.
- Top-management expertise and track record.
- Evidence that the appropriate infrastructure can be rapidly put together. In Europe, this may imply contacts with locally based professional services firms.

2. Examples

The two known specific examples of completely new companies in the systems integration market are:

- Information Consulting Group (ICG)
- Perot Systems

Although both U.S.-based, ICG is believed to be largely financed by Saatchi and Saatchi, the U.K.-based international management services group. Both ICG and Perot Systems have yet to fulfill and demonstrate commercial success; nevertheless, they are key examples of business initiatives targeting the systems integration business from effectively start-up positions.

The $40 million contract obtained by Grumman Data Systems (GDS) from Rolls Royce in the U.K. is another relevant example. It appears, however, that GDS has not sought to leverage its position in Europe on the basis of this contract, although this was clearly a possibility for them. In order to obtain this contract, GDS was required by Rolls Royce to work with a local subcontractor, SD-Scicon, 25% of whose stock is held by British Aerospace.

Other examples of this type of approach would need to be drawn from other areas where business can be and has been founded on the basis of a major contract.

Some examples are:

- Racal and SD-Scicon forming a company to build and operate the U.K. Government's new Data Network (GDN)

- TV and satellite franchises
- Cellular telephone franchises

a. Information Consulting Group

Saatchi and Saatchi, the worldwide advertising and business services organisation, has taken a significant role in the launching of a new firm targeted at the systems integration market. The new company has been called ICG (Information Consulting Group). Saatchi and Saatchi has an option to buy the company after five years of operation, when it is planned to have achieved annual revenues of more than $100 million and employ around 1,000 people. As yet, Saatchi and Saatchi's exact relationship with ICG is not known, and it is understood that the details have yet to be resolved.

Interestingly, five former Andersen managing partners have reputedly been recruited to the business, along with a senior partner from the consulting business of Peat Marwick. ICG is being led by Mr. Gresham Brebach, the former head of Arthur Andersen's U.S. consultancy practice until he was dismissed earlier this year.

b. Perot Systems

The career of Ross Perot, his departure from EDS and then General Motors following his well-publicised disagreements with Roger Smith and his subsequent founding of Perot Systems are well known in the United States business community. It is, therefore, not necessary to expand on the details here. However, Perot Systems is another example of an attempt to create a systems integration business from a standing start.

Currently with only 41 employees (including high-level Perot acolytes recruited from EDS), with Perot's buyout agreement precluding his organisation from operating for profit until December 1989, and with his infamous contract with the U.S. Postal Service on hold pending legal judgements, the jury is still out on Perot Systems.

Perot Systems has stated that it aims to be a $1 billion revenue company by 1998. It aims to act as a general contractor utilising a wide range of subcontractors. The U.S. Postal Service contract apart, Perot Systems intends to start bidding for smaller commercial projects before bidding for much longer multibillion-dollar Federal contracts. It reputedly already has a $250,000 joint venture contract with Sage Software to provide software and training to Los Alamos Laboratories.

3. Evaluation

Inevitably, in any new market there are going to be new entrants. The sheer size of system integration contracts does, however, preclude all but 'special' situations (such as those described in the previous subsection) from participating. The key question for MMDS is how viable such an approach would be in Europe.

Clearly the suitability of this strategic approach needs to be assessed against the parameters of:

- The planned size of the business and expected growth rate over a determined time period (say five years)
- The need to have demonstrable infrastructure in place and the extent to which this must be present in the targeted geographic zone
- The degree to which suitable subcontracting arrangements and contacts can or have to be established
- The size of the initial contracts being sought as the start-up position for the business

For large-scale systems integration projects, it does seem possible to set up a completely new business through the assembly of a top management cadre and the development of appropriate subcontracting arrangements.

In respect to FM, a similar situation applies, particularly since staff are often recruited from the sites for which the contract is awarded. For consultancy and other professional services, the start-up position is clearly a much used strategy. However, the principal difficulty encountered is achieving sufficient growth organically.

Another consideration that is relevant for discussion here is the development of a systems integration business on the platform of an existing business in professional services. Clearly this is the entry point into systems integration for most players, for example Arthur Andersen, Cap Gemini Sogeti, Logica, etc.

Cap Gemini Sogeti (CGS) has attempted to present itself to the market as a systems integrator (partly a public relations response to EDS's acquisition of SPI in France) on the basis of the larger custom software development projects it has implemented. CGS has claimed that approximately 10% of its total revenues is derived from systems integration.

In fact, CGS has now acquired an almost 100% controlling interest in SESA, a company that can be clearly defined as a systems integrator. Prior to this, CGS had worked closely with SESA on systems integration projects, notably the Annuaire Electronique through a GIE arrangement (Groupement d'Interest Economique).

In summary, some of the key benefits of this approach can be summarised as:

- Independence—The ability to remain in control over the development of a company culture and environment, and to be in the driver's seat with subcontractors
- Avoidance of the risk of acquiring a poor company that fails to meet the expectations made of it when purchased

Potential downsides can be listed as:

- High risk of not obtaining necessary large contracts early enough (or at all) to establish a business of the necessary size
- The difficulties involved in assembling a proficient top management cadre

B Acquisition

1. General

The second major category of market entry approach is through the form of the acquisition of a going concern and its assets, variously described as acquisitions, mergers or takeovers.

This could take the form of either:

- Acquisition of an existing SI business
- Acquisition of a related business (e.g., a consultancy practice or professional services firm that would provide a springboard into the SI market)

Currently in Europe, as in the United States, the information services industry is in a volatile state in respect to mergers and acquisitions. INPUT has estimated that more than 100 mergers or acquisitions took place during 1988; it is estimated that over 70 took place during 1987.

2. Examples

The most germane examples of acquisitions in the systems integration and professional services business include some already examined in Chapter III. These were:

- Cap Gemini Sogeti's acquisitions of Data Logic in Sweden and SESA in France.

- System Designers' acquisition of Scicon and CAP Group PLC's merger with the SEMA Group.

In addition to these, other acquisitions of particular significance are considered to include:

- EDS's acquisition of UCSL (Unilever Computer Services Ltd) in the U.K. and SPI (Societe pour l'Informatique) in France as its strategy for development of its Western European business.

- NYNEX's acquisition of BIS in the U.K..

Most other examples of acquisitions are not of specific relevance to a U.S.-based organisation entering Europe. Certainly it has been a high priority for some companies to enter the U.S. market or to extend their U.S. presence via acquisitions. Logica recently took over the U.S. company Data Architects, fundamentally to strengthen its U.S. position. Data Architects did, however, have a European presence itself which Logica could add as a component to its existing resources.

McDonnell Douglas has made a number of acquisitions in Europe in seeking to develop its information services business. Although McDonnell Douglas has obtained at least one systems integration contract (for British Telecom in the U.K.) and is believed to be intent upon participating in this sector, none of its acquisitions relate to this area.

Lockheed Corporation purchased Metier, a turnkey system and software product vendor of the ARTEMIS project management system. Lockheed is not known to have any current activity in the Western European systems integration market.

CSC, intimately connected with the government systems integration market, has also been involved in some acquisition activity in Belgium. CSC Europe made the announcement some 18 months ago that it had a

$200 million 'war chest' for acquisitions and that it was interested in entering the commercial systems integration market. Subsequently, it acquired a small processing services bureau in Belgium as a basis for developing FM business but failed to achieve one other acquisition that it had targeted.

3. Evaluation

The generic arguments for and against acquisition are well-known and to some extent mirror the arguments for and against the 'new development' and organic growth approach. Consequently it is unnecessary to rehearse these arguments at length in this report. Suffice it to say that an acquisition conducted professionally and with the compliance of the professional staff:

- Provides the acquirer with an 'instant' presence in the target market in terms of position and capability

- Provides the acquirer with a source of local nationals who understand the special characteristics of operating in that market

However, on the downside, the acquirer is exposed to certain risks and difficulties, which are principally that:

- It may have to pay a very high price for a well-regarded and financially solid organisation

- It runs the risk that the acquired organisation does not in experience, despite due diligence studies, meet the business goals of the acquirer

- It has an identity problem or company culture problem which precludes the achievement of the acquirer's objectives

In most of the acquisition examples quoted, the experience is too recent to make judgements on whether they have succeeded or failed.

In the case of EDS, there is no evidence to suggest that the acquisitions made have not been of considerable assistance in establishing EDS as a significant participant in the Western European market. However EDS has had problems in adjusting to European conditions, and these seem to have been particularly acute in the U.K. Additionally, there seems no question that EDS has not achieved the anticipated development of systems integration business.

The jury is very much still out on the SD-Scicon takeover, but the current judgement would be that the acquisition process has gone remarkable smoothly. This has largely been achieved through the retention of the two groups' main structures, due to the complementary nature of their businesses, thus minimising staff displacement and consequent loss and the attendant effect on the client base. It is interesting to note that SD itself was formed from a previous takeover situation that could not be described as smooth and which may well have provided valuable experience to the senior management team in managing such situations. On the mainland of Europe there was little business overlap, with Scicon having significant subsidiaries, SCS in West Germany and GFI in France, and SD having only limited presence.

The formation of the Anglo-French SEMA Group is an experiment in attempting to marry the very different business styles of the French and the British. Whilst both sound companies in their own right, they still have to prove that they can now obtain sufficient economies of scale and achieve the benefits of pan-Europeanism from their combined status.

Some idea of the target area for substantial acquisitions can be gained from the vendors listed in Exhibit VIII-1 for France and Exhibit VIII-2 for West Germany. These tables show the largest professional services organisations in these two countries with the exception of the very large groups like CGS, which are very unlikely acquisition targets.

These tables illustrate the relatively limited numbers of acquisition targets that can be considered to be of a reasonable size. For each vendor the main ownership details are given.

EXHIBIT VIII-1

PROFESSIONAL SERVICES VENDORS— FRANCE

Company	1987 Revenues ($ Millions)	Ownership
CGI	115	Quoted on Bourse (2nd Marche); 33% growth, 1987
Sodetag TAI	75	Thomson Subsidiary
Syseca	72	Thomson Subsidiary
SITB	62	Private Company; Mainly Banking Sector
Sopra	62	Private Company
TITN	58	Alcatel Subsidiary
CMG	47	Private Company
Unilog	45	Public Company (2nd Marche)
Ibsi	44	Private Company
Dataid	42	Public Company (2nd Marche)
Answare	40	Subsidiary of Alcatel
ESIA	36	Subsidiary of SGN/Technip
Soleri	26	Private Company
Infi	26	Private Company

EXHIBIT VIII-2

PROFESSIONAL SERVICES VENDORS— WEST GERMANY

Company	1987 Revenues ($ Millions)	Ownership
GEI	72	Owned by AEG/Daimler Benz
EDV Ploenzke	65	Privately Owned
Roland Berger	48	Partly Owned by Deutsche Bank
ADV/Orga	47	Quoted Company
Softlab	46	Partly Owned by BMW
Krupp Atlas	46	Owned by Krupp Group
MBP	46	Owned by Hoesch Group
Ikoss	40	1/3 Owned by Thyssen
Straessle	36	Private; Fast Growth in 1987
PDV	34	Private Company
Schumann	33	Private Company
GMO	27	Public Company
DVO	26	Owned by Deutsche Babcockbeteiligung
Alldata	26	Private Company
PSI	26	Private Company
Mummert &Partner	23	Private Company
Integrata	23	Private Company
Matthiesen	22	Private Company
RHV S/W-Projecte	10	Owned by DAT Group
Interprogram	9	Private Company

C

Joint Ventures

1. General

The third approach that MMDS can consider is that of entering into some kind of commercial venture with one or a number of other organisations; in short, a joint venture. Joint ventures can take the form of commercial agreements to supply products, services or technology to partners or the more specific form of a jointly-owned independent company set up to address a specific market or markets.

In the particular case of commercial systems integration, this latter form, the establishment of a jointly-owned company with its own separate identity, could be established on the rationale of:

- The intention of bidding for a specific contract
- The intention of addressing a general market opportunity

2. Examples

The formation of consortia to bid for specific contracts is an approach well-known to MMDS in the defence area. Specific examples of this in Europe are:

- Airspace Management Systems, a joint venture between Boeing, Alcatel and Logica

- CMC, the Cobra Management Consortium, formed by Ferranti, Marconi, SEL, Electronik System and Le Materiel Electronique

In the civil government sector in Europe, the clearest example has been the formation of rival consortia to bid for the U.K.'s Government Data Network contract, valued at approximately $300 million in total. Initially, five groups of consortia were invited to make proposals:

- Plessey and CAP Group
- Racal and Scicon
- ICL/Cable and Wireless
- EDS/Northern Telecom
- British Telecom/CSC

The EDS/Northern Telecom consortia withdrew from bidding due to EDS's problems relating to other contracts it had outstanding with H.M. Government. The Plessey/CAP consortium was removed before final

bidding from the three remaining groups. The contract was finally awarded during 1988 to the Racal/Scicon joint venture.

In the commercial sector, the general size of contracts awarded does not seem to have led to the formation of joint ventures specifically targeted at one particular contract. However, it has led to the formation of a number of joint venture companies set up to address more general market opportunities.

Examples of these are:

- IBM and SESA in France have formed a joint venture (51% owned by SESA) to address the systems integration market in France.
- Memoranda of understanding was signed by British Telecom with Telefonica in Spain and STET in Italy to develop new business operations and provide single contract networks to multinationals needing network services covering subsidiaries throughout the EC
- SESAM SpA, an Italian joint venture, was formed by Digital and Fiat to address the computer-integrated manufacturing market
- Olivetti and EDS in Italy have created ISM (Integrated Systems Management) in Milan to target systems integration opportunities in the manufacturing sector.

3. Evaluation

In evaluating the possibility of joint ventures, it is important that the less-obvious downsides are brought into consideration against the more-obvious upfront benefits. Of course, when specific contracts are involved, there is often little choice but to form a consortium, either because of the specific skills or resources required or more usually because it is demanded by the purchaser.

The benefits of joint ventures can be briefly summarised as the reduction of risk. The partner or partners in the joint venture share both the general commercial risks and the specific financial risks involved in entering or maintaining a presence in a market. The partners offer the opportunity to reach markets that might be inaccessible for other reasons. These reasons could include:

- Requirement for a local national organisation to be involved

- Access to key technical or other specialised skills

Joint ventures also allow an organisation to gain knowledge about new markets and perhaps new technologies more quickly than it can build itself and more cheaply than by acquisition.

The obvious downside of a joint venture is the dilution of control and financial contribution from the endeavour. There also exist many other disadvantages that are not so clearly evident, particularly at the outset. The benefits to one partner, for example rapid entry to a new market, are effectively a downside to the other partner. An organisation entering a partnership will gain access to potentially valuable competitive information from the other.

It is thus important for an organisation to have a clear idea of what it expects to get out of a proposed partnership and, at the same time, to ensure that it does not suffer a net deficit in terms of information transference. General experience of joint ventures (including those outside the computer industry) seems to indicate that the majority of benefits from a joint venture accrue to those companies that are best at gaining information and learning from their partners.

D
The Way Forward

1. Business Potential

Currently, INPUT has assessed the 1988 commercial systems integration market at $1.1 billion. The top twenty vendors identified account for some 90% of that total, ranging in market share from 17% at the top for IBM to 1% at the low end. Annual revenues generated in this sector range from $190 million to $10 million.

Clearly considerable volatility of competitive rankings can be expected due to the nature of the system integration project size and the entry of significant new competitors, for example MMDS.

Given the preparedness to commit sufficient resources in terms of both human resources and investment funds, it is reasonable to postulate the achievement of anything up to a 5% projected market share. Certainly a 2% or 3% market share looks achievable, representing projected annual revenues in 1993 within the range of $80 to $120 million. A 5% market share would represent annual revenues of around $200 million.

2. Implementation

At this stage, the way forward for MMDS to exploit this market opportunity can only be proposed in broad terms. For example, an acquisition strategy would appear to be key to achieving a reasonable market penetration (i.e., in the range of 2% to 3%), and a substantial acquisition would probably be vital in order to achieve the 5% level. However, it is not possible to rule out the possibility of a joint venture approach at this stage.

Nevertheless, some attempt can be made to outline possible implementation actions that MMDS should consider, since such actions can broadly be considered to be supportive to any further specific initiatives, e.g., acquisitions and joint ventures.

Possible actions for consideration by MMDS would include:

- Setting up a European professional services vendor liaison function
- Forming an acquisition/partnership team
- Setting up a consultancy practice within Europe
- Developing a public relations initiative

Setting up a European professional services vendor liaison function is an initiative proposed with dual aims: gaining first-hand market knowledge and experience and positioning the company to participate in opportunities that might not otherwise be uncovered or uncovered easily enough.

Simply approaching all the leading professional services firms, with the objective of gaining good in-depth knowledge of what is going on in the market from current participants, would be a possible starting point. In order to do this, it would be necessary to appoint a professional services vendor liaison executive. Although the larger participants in the market would not appear to be attractive targets at first glance, it could be that some might welcome injections of finance, management or technical expertise in an increasingly competitive and high-risk market. It is also possible that back subcontracting opportunities might emerge, which would represent an additional market entry strategy.

A further development would be the formation of an acquisitions/partnership team to identify and seek out possible subcontractors and acquisition targets. Initially, smaller consultancies could be targeted, with larger professional services firms considered as a second step.

A more direct initiative would be to develop a consultancy practice that, although operating in Europe, could be supported from the United States. This would provide a platform from which project-oriented work could be developed.

A further elaboration of these approaches would be the establishment of a bridgehead local presence office that would allow a small team of high-level (local national) salespeople, trained in the U.S. to present MMDS expertise and capabilities at the very highest level.

All of these approaches should be supported by a public relations strategy. This strategy would almost certainly avoid the utilisation of advertising but be based upon such activities as the generation of press articles (to be placed in such prestigious journals as *The Financial Times*, *Les Echos* and *Handelsblatt*) and the orchestrating of sponsored events by MMDS that would capture the interest and imagination of senior executives.

In the latter case it is possible to imagine, for example, conducting visits to MMDS U.S.-based showpiece projects or accounts or leveraging the technology base represented in other divisions of Martin Marietta.

Clearly the ideal is to take a 'big' contract at the start as the basis for developing a European business. However, this possibility must be actively sought and certainly cannot be guaranteed and therefore cannot be considered as the basis of a firm plan.

Developing a European business in the commercial systems integration business to achieve at least a 2% to 3% market share is probably dependent to a considerable extent on the possibility of making the right acquisitions. Both France and West Germany present certain difficulties in this respect, as indicated in Section B of this chapter. In consequence, and also in respect of the fact that the U.K. represents a considerable position of the overall European market, MMDS may wish to reconsider whether it evaluates the U.K. as an alternative country of entry.

Appendix: INPUT Proposal

Appendix: INPUT Proposal

Objective

The objective of the study would be to identify a number of possible development strategies for Martin Marietta Data Systems (MMDS) within Western Europe.

Scope

The study would provide an objective analysis of the Western European information systems business based on existing and ongoing INPUT research. This would provide the environmental position within which possible development strategies could be developed for MMDS.

In particular, the study would address the country markets of France and West Germany. The U.K. would be excluded completely from the scope of the study.

Methodology

The study would commence with a detailed discussion between MMDS and INPUT to establish precise guidelines for the conduct of the study.

Information and data about the Western European information systems business would be obtained from INPUT's continuous and ongoing research programmes in Europe.

INPUT would need to interview at least two senior executives within MMDS in order to establish a full understanding of the organisation's areas of specialisation, strengths, weaknesses and any other significant business factors.

INPUT would then formulate a number of possible strategy approaches through an analysis of MMDS' needs and characteristics matched against the market environment.

Deliverables

INPUT would prepare a report to document its findings and would make a presentation to MMDS management.

Responsibility

The study would be personally conducted by Mr. Peter Lines, INPUT's Director of European Research.

Fee and Schedule

The fee for the study as specified will be £11,250 plus any direct expenses (travel, etc.) The study has been costed on the assumption that all meetings would take place in Europe. Should MMDS prefer that meetings (INPUT envisages two, the initial research meeting and the final presentation) take place in the United States, then there would be an additional charge of £1,500 per trip excluding expenses.

One half of the fee (£5,625) is due and payable upon authorisation of the study, the second half upon completion of the project.