

SOFTWARE AND SERVICES MARKET

EUROPE 1992 - 1997

INSURANCE SECTOR

INPUT

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***Software and Services Market, Europe,
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Abstract

This report analyses the market for software and services within the European insurance industry and its growth potential over the period 1992-1997. The insurance industry is a key growth area in Europe for software and services vendors, as faster and more efficient systems and more accurate information are required by companies looking for strategies that will enable them to compete in the evolving single European market.

The report provides an assessment of the current size of the market by delivery mode and by key country market. Also included are sections on the competitive environment, including profiles and rankings of leading application and service vendors and the major development forces driving market growth. The user environment was profiled in last year's research. Strategy considerations are offered to provide insight into how to take advantage of the opportunities afforded by this volatile market.

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I Introduction

A

Scope and Objectives

This study, part of INPUT's Information Services Programme for the computer software and services industry, examines the European market for insurance for 1992 through 1997. It is an update of INPUT's 1991 report.

The insurance industry is a key growth area in Europe for software and services vendors, as faster, more efficient systems and more accurate information are required by companies looking for strategies that will enable them to compete profitably in the evolving single European market.

Intensification of competition within the industry is causing software and services vendors to reassess their strategies with regard to pricing, distribution and promotion of their products, and to develop joint ventures and alliances targeting insurance and financial services businesses. The primary objectives of this report are to:

- Provide a quantitative assessment of present and future insurance software and services markets through estimates and forecasts of user revenues
- Provide a qualitative assessment of the underlying forces shaping the insurance software and services market and the surrounding competitive environment
- Identify the technological and strategic issues that will impact the insurance software and services market

This report covers the insurance services markets in the U.K., France, Germany, Italy, Switzerland, the Benelux countries, Scandinavia and Spain. INPUT's forecasts include purchases in Europe of data from international software and services vendors. Revenue to domestic vendors from sales outside Europe is excluded. Forecasts are derived from corporate user expenditures on software and services specific to the insurance sector, broken into seven delivery modes as follows:

- Processing services
- Turnkey systems
- Applications software products
- Professional services
- Systems integration
- Systems operations
- Network services

B

Methodology

This study has been compiled through a series of interviews with selected European vendors and industry experts as well as reviews of vendor-produced literature.

Twenty interviews were conducted—either face-to-face or by telephone—with leading vendors active in the insurance software and services market.

This report updates the forecasts published in the 1991 INPUT study of this sector.

C**Report Structure**

This report examines the insurance software and services industry and consists of the following sections:

Chapter II is an Executive Overview, which provides a summary of the essential points of the entire report.

Chapter III sets out INPUT's estimates and forecasts of user expenditures on insurance software and services. These forecasts are broken down by insurance type, by country market and by delivery mode.

Chapter IV is a competitive analysis examining major vendors in the insurance sector and their products, services and strategies.

Appendix A contains the rankings of leading vendors in the major countries.

Appendix B gives forecasts for the period 1992-1997 by European country, by delivery mode and by individual year.

Appendix C shows the forecast changes between the 1991 and 1992 reports.

II Executive Overview

A

Critical Changes in the European Insurance Market

Software and service vendors in the European insurance sector face a period of unprecedented uncertainty. Parts of the industry they serve are suffering serious financial hardships. At the same time, customers are becoming extremely knowledgeable in their purchase of computer systems and seek better value for money and more flexible systems.

In spite of this, INPUT forecasts buoyant growth in software and services spending, averaging 14% per year, but predicts major changes in the mix of products and services demanded over the next five years. Professional service vendors especially are being challenged to show greater competence in business implementation, network and application integration, and support of solutions based on software packages.

Times have become hard for Europe's insurers, especially in the non-life and reinsurance sectors. Attention is moving away from new products and market share towards cost reduction and efficiency in order to reverse the fall in profit levels. In 1992, Lloyds of London has announced a loss of nearly \$4 billion, likely to be followed by further losses next year. Other insurers have also posted losses resulting from overexposure, an unusual number of major disasters, and the growing size of awards in the courts.

The result of these traumas is an ever stronger recognition by insurers that theirs is an information-critical business and they need to get better and faster value for money out of their investments in IT. For some, the alternative may be far more critical—business failure.

The main driving force for change in the insurance software and service industry is the growth in standard software packages, both applications and development tools. The cost and speed of implementation benefits for such products and the platforms they run on mean that demand for completely individual custom-developed applications is falling. Instead, customers are seeking new services from the vendor—either more help with business process implementation, or support in the integration or operation of systems. This implies many changes for the traditional software services vendor whose skills lie in custom application software development.

Insurers are migrating their IS systems to more standard software as they strive to get better value for money and greater flexibility. Although few mainframes are being replaced, the common trend to downsizing is evident in the insurance sector as computers move to the workplace in ever greater numbers. The opportunities for professional services vendors are moving away from conventional application development projects or contract staffing and towards those listed in Exhibit II-1.

EXHIBIT II-1

Changing Demands on Vendors Insurance Sector, Europe

- Migration planning and support
- Systems management for old or new applications
- Integration of mainframe and PC networks
- Consultancy on business process changes

The European market for software and services specific to the insurance industry is valued at \$3.8 billion of user expenditures in 1992, growing at a compound average growth rate (CAGR) of 14% per year to reach \$8.2 billion by 1997. The life subsector represents the largest and fastest growing in terms of revenue, premium receipts and software and services spending (15% CAGR)—especially for network services and applications software. The other two subsectors are expected to grow more slowly—non-life at 14% CAGR and reinsurance, well down from previous forecasts, at 9% CAGR.

Investment in information technology in the insurance sector is expected to rise from around 10% of business operating expenses to some 15% over the next five years. INPUT forecasts that user expenditure on software and services will rise nearly 92% over the same period.

The already high level of expenditure means there is a huge existing investment in business-critical applications and business information in the

insurance industry. The major challenge facing vendors and users alike is how to exploit both the past investment and the newer emerging technologies with maximum benefit to the client's business in an increasingly competitive European market.

Equipment platforms are changing ever more rapidly, causing users to continually re-visit decisions as to which software to run where and on what type of system. System software is becoming more portable, considerably broadening and perhaps confusing the choice of hardware platform.

Application packages conforming to standards and rich in function are becoming available from a choice of suppliers—even in the mainframe arena, which has been traditionally light on standard packages. These new applications will in nearly every case have to coexist with existing old, in-house-produced applications.

Insurers are seeking professional services vendors who can support them in their migration from old to new systems. Few vendors have yet extended their activities beyond those relating to new custom software development, but there is pent-up demand for more operational software support, especially for in-house-produced applications.

Exhibit II-2 shows the top issues affecting European users (IS managers) in priority order. It is refreshing to observe that IS architecture and strategy have become integral parts of the business development process. They are now clearly seen as essential foundation stones within such information-intensive businesses as insurance.

EXHIBIT II-2

Important User IS Issues Insurance, Europe

- Adapting to "1992" changes
- Developing future systems architecture
- Developing strategic information plan
- Improving productivity with technology
- Improving customer service

INPUT's research identified the problems listed in Exhibit II-3 as of particular concern to IS management. All of the problems represent areas in which vendors should find business opportunities if they can offer sympathetic help.

EXHIBIT II-3

Users' IS Problems Insurance, Europe

- Integrating acquired businesses
- Internal resistance to change
- Old products
- Lack of trained staff

At the top of the list is the problems of merging with the IS systems of acquired businesses, resulting from the spate of recent insurance takeovers. Second comes the problem of change management, in which some IS vendors already specialise, with internal resistance to change seen as a significant barrier to progress. The continued support of old insurance products (with old applications and databases) identifies the applications maintenance problem already alluded to.

INPUT research suggests that over 65% of IS staff in the insurance sector are dedicated to the ongoing maintenance and support of existing applications. This suggests opportunities for vendors both in supporting current operations and in providing resources for future systems development. This, in turn, leads to the fourth problem that, despite the high investment in IT, the shortage of skilled staff to implement changes is yet another real stumbling block to progress.

B**Market Analysis**

Exhibit II-4 shows the European market in three subsectors: life insurance, assurance (savings) and pensions; non-life including property and casualty; and reinsurance placed by insurers on other insurers.

EXHIBIT II-4

**Insurance Software and Services
Europe, 1992-1997**

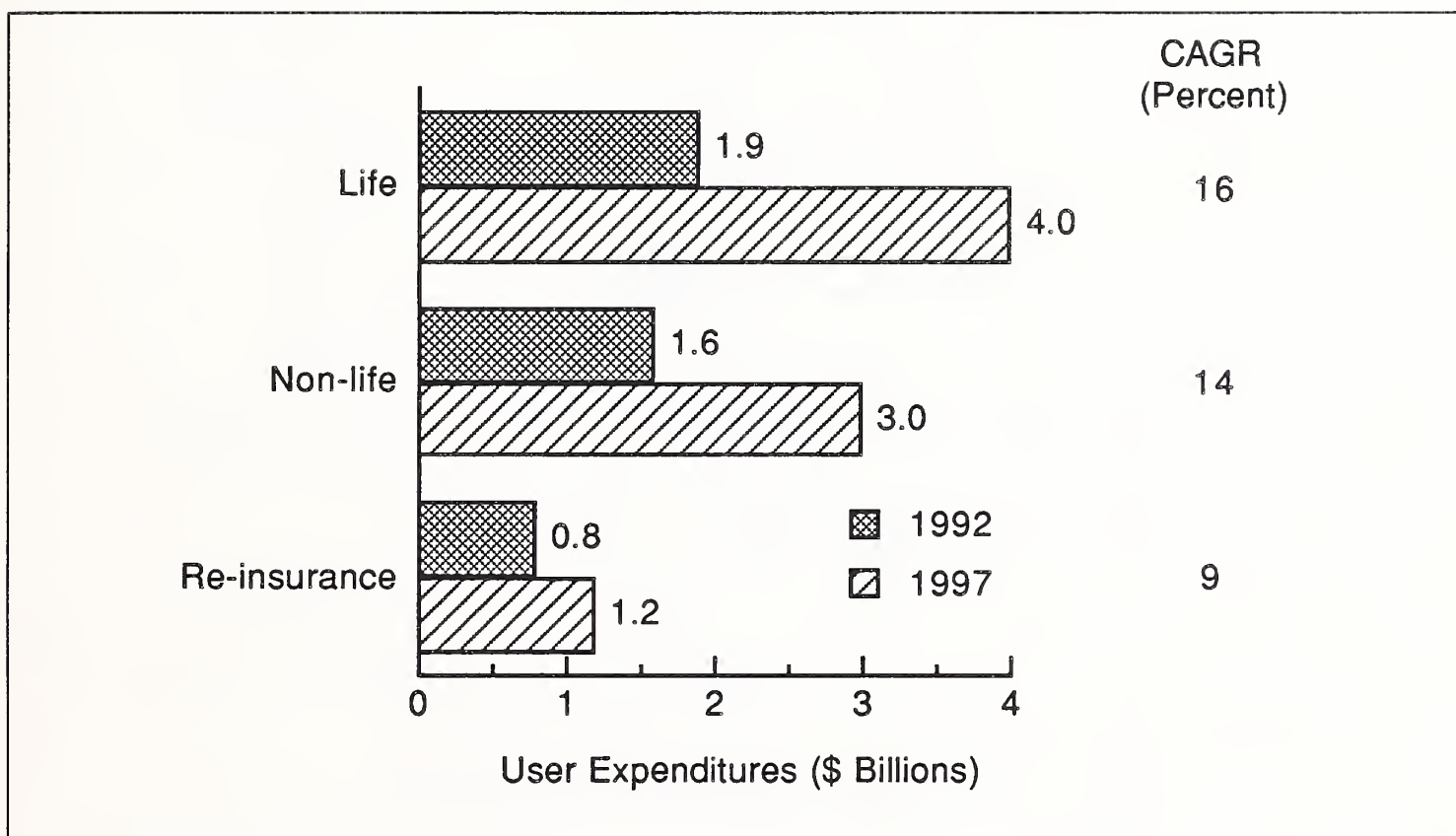
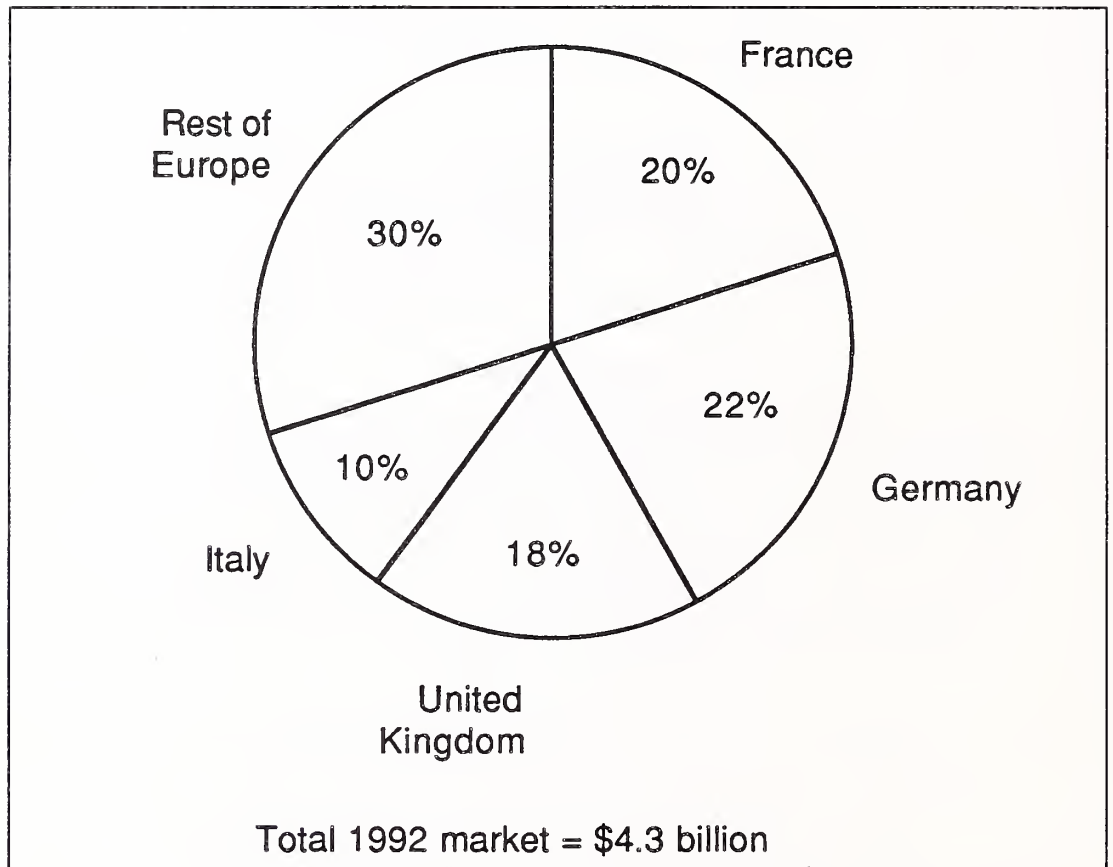


Exhibit II-5 shows the spread of the insurance user expenditure on software and services across the major European countries. The ranking by insurance premiums in each country are (from the top) Germany (26%), U.K. (22%), France (17%), Italy (6%), Switzerland, the Netherlands, Spain, Sweden, Belgium, Austria, Finland, Denmark, Norway, Ireland, and Portugal.

EXHIBIT II-5

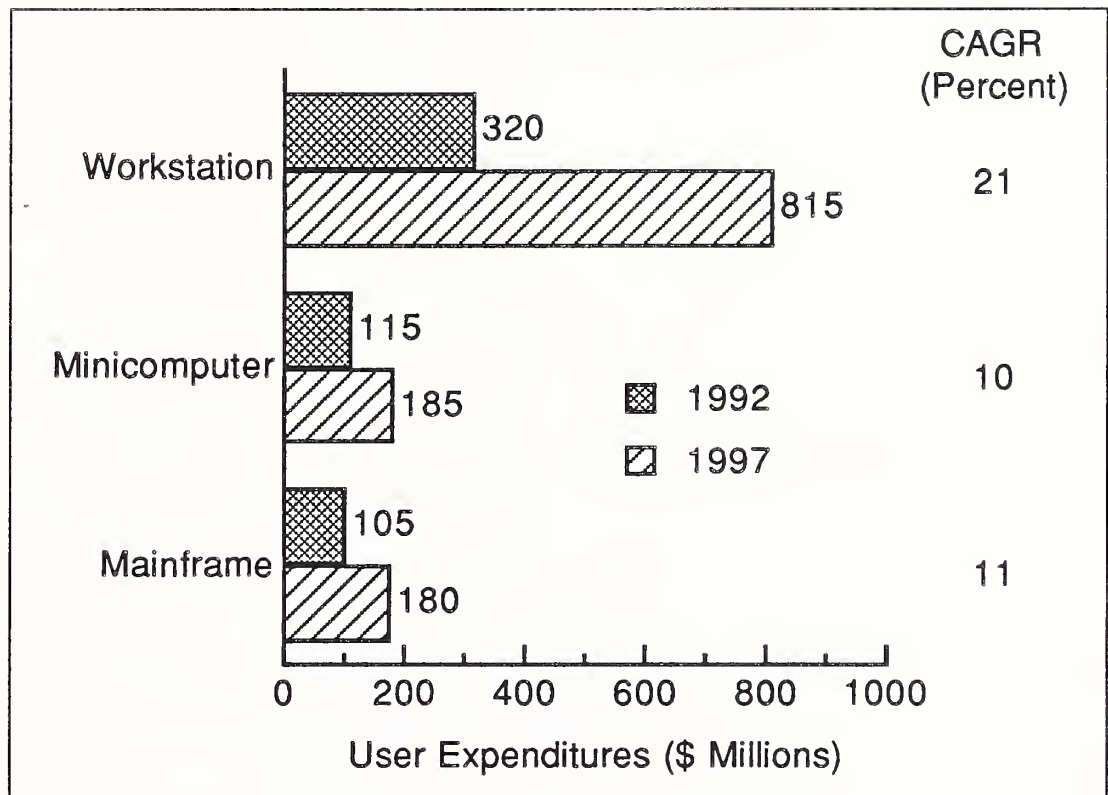
European Insurance Markets, 1992



The user spend on applications software is unusual in the insurance sector because it has a significant bias towards mainframes, as shown in Exhibit II-6. In fact, the strength of competition on this equipment platform will undoubtedly encourage higher than normal growth. As with most markets, the workstation and PC sector is already the largest and growing substantially faster than the other two as applications continue to be downsized.

EXHIBIT II-6

Insurance Applications Software Products Europe, 1992-1997



C

Competitive Analysis

Rankings of the leading software and services vendors for France, Germany, the U.K. and Italy are provided in Appendix A.

1. IBM

With nearly all the large insurers qualifying as "enterprise" accounts, IBM has a unique understanding of the problems they face in exploiting IS to the full. IBM sees a clear demand emerging among its customers for mixing and matching applications from different sources. Exhibit II-7 summarises IBM's market position.

EXHIBIT II-7

Vendor Profile—IBM

Heritage	Largest vendor worldwide Seeking software and service margins Overmanned and undermanned
Focus	Repeatable customer solutions Systems integration Vendor partnerships
Strength	Dominant insurance client base Visible high investment in insurance Product distribution channels
Direction	European focus for global insurance Minority shares in key partners Prime contracts with "enterprise" customers

The new world promised by IBM with IAA has many attractions as it aims to create an environment in which both tasks—migration and integration—become easier to manage:

- IBM is investing in its own systems integration ability to help customers manage the transition.
- The application architecture is largely platform independent.
- Large applications can be fragmented to a more manageable size.

IBM is not investing directly to produce insurance application products itself, but is investing in providing its clients with:

- A manageable system development path within an architectural framework
- The supporting professional services with which to map the path out, and if necessary manage its implementation with a systems integration contract
- A choice of national and international applications from which to mix and match unique solutions

2. CAP Gemini Sogeti

Exhibit II-8 summarises the position of CGS. The insurance market is one of five sectors CGS has identified as strategic, that offer good growth potential and build on CGS' existing capabilities and its client base across Europe and elsewhere. Revenues for 1991 were approximately \$90 million.

EXHIBIT II-8

Vendor Profile—CAP Gemini Sogeti

Heritage	\$2B European systems leader Professional IS services
Focus	Acquisition of strong players Extended into management consultancy Insurance sector
Strength	Acquisition management Highly distributed business Europe-wide cover, major systems
Direction	International insurance sector "Responsibility" contracts

CGS is expecting synergy to grow between its acquired management consultancies and its software companies, with local cooperation occurring as the need arises. The CAP Gemini International Support group is expected to provide further impetus to this direction by adding international marketing and distribution of the company's capabilities—in its chosen markets.

Hoskyns (a subsidiary of CGS in the U.K.) and Prudential are working together on an innovative approach to reducing the software maintenance work load and freeing staff to work on new applications. CGS is also working closely with several major insurance clients to define an IS architecture suitable for each business in the 1990s. This initiative complements some of IBM's IAA (Insurance Application Architecture) work.

3. PAXUS

Exhibit II-9 profiles PAXUS, the leading software and services vendor publicly quoted on the Australian Stock Exchange. Founded in 1970, PAXUS has built up a broadly-based business in Australia and Western Europe and is also expanding its operations in both Canada and the Far East.

EXHIBIT II-9

Vendor Profile—PAXUS

Heritage	Leading quoted Australian IS vendor Founded 1970 IBM 15% stake
Focus	Insurance, banking, accountancy and health care in Australasia, Europe, and Canada
Strength	Diversity of products, countries and industry sectors
Direction	Non-U.S. market leadership Acquisitions and organic growth

Recent acquisitions include IDAPS Australia in 1988 and Capsco Pallm Systems and Insurance Software and Systems Ltd A/S of Norway in 1990. Capsco and ISS were subsidiaries of insurers Swiss Reinsurance from 1987. Capsco specialises primarily in integrated insurance systems for the life and health sectors. ISS specialises in the reinsurance sector.

PAXUS is structured into three market-focussed operating groups:

- *Insurance* addresses the insurance, banking and financial services market. PAXUS holds the pre-eminent position in the supply of specialist software products to the insurance industry outside of North America.
- *Accounting* addresses the professional accountants sector.
- *Services* addresses the corporate, government and health care sectors, offering processing and network services.

Approximately 450 of PAXUS' 2,000 staff are employed in the European operations, resulting in revenues approaching \$50 million in fiscal 1991.

4. Policy Management Systems Corporation

PMSC was founded in the U.S. in 1974 (see Exhibit II-10). It went public in 1981, and in 1989 IBM acquired a 19.8% minority equity interest for \$116.8 million.

EXHIBIT II-10

Vendor Profile— Policy Management Systems Corporation (PMSC)

Heritage	USA 1974, industry leader Over 80 products and services IBM 20% stake
Focus	Integrated insurance systems property and casualty (91%)
Strength	Co-development of IAA with IBM in Brussels Over 5,300 clients—mainly U.S.A.
Direction	IBM mainframe and midrange Global insurance leadership

More recently it has emerged that PMSC is working in partnership with IBM in Brussels on the specification and development of IBM's insurance applications architecture (IAA) project. This should position it well to grow its European business, which is currently a relatively small proportion of its total insurance sector business (\$346 million in 1990—less than 10%). In fact, it plans to grow European business at around twice the pace of its domestic business, with Northern Europe its primary target.

PMSC—already a dominant force in the insurance software and services industry before it acquired another leading vendor recently, Advanced Systems Applications—provides a full range of integrated software systems and services to all sections of the insurance community. The property and casualty (non-life) sectors generate the majority of PMSC's business.

PMSC has a very large portfolio of products and services—over 80 offerings in total—half of them software products. In particular, its Series IIITM products focus on the needs of the large insurer.

5. The Continuum Company

Continuum (see Exhibit II-11) has operated in Europe, primarily in the U.K., since 1982. The European operation reportedly lost \$1 million in the year ended 31 March 1991, put down to the heavy investment required to

establish business from its new Paris and Frankfurt offices. The company reports business during 1990 from the United Kingdom, Ireland, France, Germany, the Netherlands, Portugal, Norway, Denmark, Sweden and Finland.

EXHIBIT II-11

Vendor Profile—Continuum

Heritage	U.S.A. 1968; Computations (Australia) added 1990
Focus	Insurance only; IBM U.S.A, Australia and Europe
Strength	Services (94% of revenues) High R&D (35%+)
Direction	IAA, SAA Financial services integrated solutions, global delivery

Acquisition of Computations extended Continuum's market from life and health insurance companies into property and casualty companies. Computations had an established market in both Australia and Northern Europe.

European revenues for fiscal 1991 reached \$23 million, up 125% from the previous year. The acquisition of Computations contributed about \$9 million to European service revenues, or some 90% of the revenue growth. Net income from Europe fell from \$126,000 in 1990 to a loss of \$1 million, attributed by the company mainly to start-up investments.

6. Andersen Consulting

Andersen Consulting (see Exhibit II-12) expects to record around \$45 million of software and services business in the insurance market for the year 1990/1991. Andersen has a continuing research programme of Delphic studies, technology user surveys and executive focus groups, giving it a deep and unique insight into the dynamics of the insurance industry. This research, which has been published in the U.K. as "Insurance in a Changing Europe 1990-95" by Economist Publications Ltd, concludes that the issues facing the insurance industry in the 1990s are:

- Strategy—identifying and exploiting opportunities created by change
- Productivity—promoting the efficient and effective use of people and operations
- Technology—implementing flexible, cost-effective systems that support and drive business strategies

EXHIBIT II-12

Vendor Profile—Andersen Consulting

Heritage	Professional services Large body of IT skill High-quality partners
Focus	Business integration solutions Full-service capability
Strength	Major projects ability Proven methods Business and IT insurance skills
Direction	Systems management Multinationals Organic growth

D**Conclusions and Recommendations**

The main issues taxing vendors are identified in Exhibit II-13. The widening gap between global players and niche specialists amongst insurers and their software and services suppliers is causing difficulty for the smaller national vendors seeking to expand internationally. The answer for smaller vendors lies in the area of partnership, but this is not a straightforward issue. Vendors both large and small still eye their new or potential partners with some suspicion. In particular, some have underestimated the time and attention required to launch and maintain a fruitful alliance.

EXHIBIT II-13

Vendor Issues

- Polarisation—global versus niche
- Partnerships demand attention
- Maintenance of in-house systems
- Migration planning
- Shortage of first-class staff

The wealth of existing in-house applications is becoming an issue that vendors can no longer ignore. Any significant new application system has to co-exist with much older software and databases. The old systems are resource hungry, and in-house skills and expertise tend to become locked in to these old systems, making it difficult for the client to move on to new technology. Vendors are beginning to seriously look to helping clients with both the maintenance of old systems and migration to new ones.

A secondary effect of the attention given to old systems is that the industry is beginning to suffer from a shortage of skills, particularly those that span business applications, system architectures and available new technologies.

The key strategies INPUT recommends to vendors are shown in Exhibit II-14. Architectural frameworks, largely built on IBM's IAA initiative, are very likely to gain wide acceptance in view of the strong demand for them from IS directors. Vendors must acknowledge this and understand how to fit their own offerings and add value for clients in such grand schemes.

EXHIBIT II-14

Key Vendor Recommendations

- Sell within architectural frameworks
- Be prepared for mixed application vendors
- Focus on migration and business process issues
- Prepare sound cost justification cases

As users look to the market for application solutions instead of building everything in-house, they will inevitably need to make disparate software inter-work and co-operate. This could be a major opportunity for service vendors prepared to provide a system built with applications from other product vendors.

The client's biggest headache isn't not knowing where he is going, but how to get there from here! Migration strategies that provide a planned route to new applications will win over those that ignore the obstacles facing insurance IS management. Vendors who can offer sound advice on business process issues will have a strong competitive edge.

In a difficult economic climate it is more true than ever that nobody buys technology for its own sake. This makes it imperative that a migration route include a sound financial case. This is where vendors with a long track record in relevant insurance subsectors, with plenty of case studies to call on, should have the advantage.

III

Market Analysis

A

European Overview

Insurance in Europe is undergoing a period of profound change. However, compared to companies in other sectors such as banking, insurance companies have been slow to respond to changes. Insurers are sheltered in some markets by regulators' convictions that insurance is more important to consumers than are other financial services, and in others by the near-impenetrability of insurance products and financial statements.

This change has been caused by a complex interaction of forces—including deregulation, competition, rapid technological developments and the gradual penetration of the banks into traditional insurance markets.

The three essential driving forces in the insurance industry are:

- Deregulation
- Competition
- Technology

The result is consolidation within the industry and a spate of cross-border alliances; insurance companies are moving belatedly towards becoming international all-purpose operations, as have banks and securities houses.

These forces are resulting in the following insurance industry activities and business characteristics:

- Convergence
- Consolidation
- Cross-border alliances

In this report, INPUT concentrates on developments in the insurance industry and the consequent opportunities for computer software and services vendors. The report discusses the issues and considerable challenges faced by the industry and the need to satisfy insurance companies' requirements as they prepare for the formidable dual challenge presented by the single European market (likely to have real impact in 1995 rather than 1992) and the increasing role of banks in the insurance sector.

Insurance providers are already operating in an extremely competitive environment within their domestic markets. Within this business there are other, more pressing concerns: a growing elderly population, the effects on the climate of global warming and the increasing (apparent) negligence of large multinationals with regard to security as they try to improve efficiency and maintain competitiveness in an increasingly cutthroat market.

The main pressures on the industry are considered to be:

- Single European market
- Gradual penetration by banks
- Poor financial margins
- Attitudes to security
- Growing elderly population
- AIDS
- Global warming

European insurers have sought alliances with foreign banks rather than with other insurers as a strategic option. Such links have become so common that the French now talk of "Bancassurance" and the Germans refer to "Allfinanz." For example, Allianz has set up a joint venture with Spain's Banco Popular to sell life policies through the bank's 1,600 branches. Commercial Union has signed Credito Italiano to sell life and non-life insurance through Commercial Union's network of over five hundred branches.

Bancassurance is becoming increasingly common in domestic markets as well. France has seen a spate of government-inspired marriages between state-owned banks and insurers. These marriages are designed to strengthen the combined group's capital bases, such as UAP's link with BNP. In Germany, Allianz has tied up with Dresdner Bank. The bank offers Allianz's policies through its branches, while the insurance company's 20,000-plus sales force promotes Dresdner's products. The powerful Deutsche Bank owns 10% of Allianz as well as 10% of the Munich Re.

Insurers can benefit only by using banks' distribution networks. As the single European insurance market unfolds, traditional sales forces could become obsolete. There can be little doubt that the prospect of obsolescence has reinforced insurers' keenness to use the banks' high street branches to sell policies. There is concern within the insurance industry that banks will take business away from insurers. Some of Europe's biggest banks are already targeting the long-term savers, the insurers' primary market.

As a result, insurance companies looking to become pan-European operations are being forced to fundamentally rethink software and systems to provide the flexibility to cope with rapidly growing information needs. The major opportunities for software and services vendors in the 1990s will stem from the moves by the insurance industry to become fully electronic in the 1990s, precipitated by the banking industry's move to offer insurance services.

B

Insurance Industry Subsectors

Insurance comprises three distinct businesses, each with its own dynamic, its own strategic imperatives. However, in Europe, the businesses are usually grouped under one corporate roof.

In this report, INPUT has broken the insurance sector into the following three segments:

- Life—Increasingly including a form of savings as well as life cover, pensions and health insurance
- Non-life or general—This type breaks down into "personal lines" or "mass risks"—house or car insurance, for example—that individuals buy, and industrial and commercial "large risks" that companies and professionals insure against, such as catastrophic damage or product and professional liability.
- Reinsurance—The insurance that insurers take out to defend themselves against big claims, odd risks, or times when insurers write more business than they have capital to support.

1. Life

Pure life assurance provides protection against a certain event, i.e: death. The odds in life assurance can be easily calculated. Because the liability is long term, insurers do not need a huge capital base of their own. Premiums for life assurance and related products account for just under half of total direct (excluding reinsurance) business in Europe. It is the fastest growing and fastest changing sector and usually the most profitable.

Europeans are underinsured compared to the Americans or the Japanese—European life premiums are \$390 per head, as opposed to the others' \$725 and \$1,560. Reasons for Europeans' underinsurance are: life expectancy has increased by 50% this century; old age brings more complicated ailments; and medicine provides more expensive cures. Europeans are now more worried about providing for their retirement than for death.

People also buy life insurance that pays before they die—"with profits" policies that entitle them to a share in the profits that the insurance company makes by investing their premiums, or linked policies tied to the performance of a unit trust or another measure.

The Prudential in the U.K. has calculated that the savings element accounted for more than 80% of premiums in 1989 and life covered less than 20%. However, with financial liberalisation, the increased competition has resulted in insurers' improving their offers to policy-holders and salespeople.

The life subsector represents the largest of INPUT's three insurance subsectors. The group is also the fastest growing in terms of revenue, premium receipts and software and services spending—especially for network services and application software.

Exhibit III-1 provides a detailed market forecast for the life insurance subsector, forecasting a compound annual growth rate (CAGR) of 16%, varying for each software and service delivery mode.

EXHIBIT III-1

Software and Services Market Insurance Sector—Life, Europe

Industry-Specific Delivery Modes	U.S. Dollar Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	300	8	325	10	515
Turnkey Systems Applications	320	16	370	16	780
Software Products	205	24	255	19	620
Professional Services	670	18	790	14	1,530
Network Services	60	17	70	27	235
Systems Operations	32	16	37	18	83
Systems Integration	48	25	60	26	193
Industry Sector Total	1,640	16	1,910	16	3,960

Note: Cross-industry software products and services are omitted from this forecast.

2. Non-Life

General insurance gives protection against an uncertain event. As a result, general insurers require more capital, as they have to write more business to spread their less-quantifiable risks; furthermore, insurers have to pay more quickly. Much large risk is insured and reinsured internationally, especially through independent brokers, many of whom are in London. Price is the key.

The demand for non-life insurance roughly follows economic growth, demography and income. However, premium volume does not always reflect demand. Rates are controlled in some countries (in mandatory motor insurance—for instance, in France, Spain and Germany). Premium growth is also influenced by non-economic trends, such as the rising liability awards granted by European courts. Non-life rates are strongly influenced by cyclical swings in capacity and competition.

Although comparing statistics in the insurance market is misleading (French tax accounting means that companies tend to understate underwriting profits; in Switzerland, taxes are included in operating costs; in Germany, there is no breakout of capital gains and losses), European integration will undoubtedly bring an end to the subsidy of large risks by mass risks. For example, individuals pay heavily to insure the contents of their houses, whereas companies pay little to insure against fire.

More competition and transparency should lead to more unbundled pricing of specific products. Underwriting results in non-life insurance in many classes and countries have deteriorated, whereas in large risks prices have generally been soft since 1986. The past disaster-packed two years—including the January 1990 storms that did \$1 billion worth of damage in Northern Europe—significantly raised rates on property insurance, for example.

Market forecasts for the non-life subsector are provided in Exhibit III-2.

EXHIBIT III-2

Software and Services Market Insurance Sector—Non-Life, Europe

Industry-Specific Delivery Modes	U.S. Dollar Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	160	2	165	6	215
Turnkey Systems Applications	310	9	340	12	595
Software Products	155	12	175	17	385
Professional Services	620	9	680	14	1,310
Network Services	85	21	105	21	265
Systems Operations	23	15	26	18	61
Systems Integration	52	20	62	20	154
Industry Sector Total	1,410	10	1,550	14	2,990

Note: Cross-industry software products and services are omitted from this forecast.

3. Reinsurance

Reinsurance is the most international and least regulated of the three kinds of insurance. A little less than one-tenth of direct insurance worldwide is reinsured. About 80% of reinsurance premiums come from non-life risks, although there is country differentiation: in the U.K., life assurance accounts for about 40% of total reinsurance, and in Italy new life companies are required to reinsure 30% of their premiums initially. Europeans reinsure a higher proportion of their risks than do the Americans or Japanese; the world's two largest reinsurers are European.

Reinsurance is especially prone to swings in capacity because all anyone needs to offer it is capital and an underwriter. The flood of innocents into the market in the early 1980s has halted and reinsurers do not anticipate their return. U.S. direct insurers say they are owed some \$20 billion in nonrecoverable reinsurance claims and are consequently choosing their reinsurers with more caution.

Like their European counterparts, U.S. direct insurers are retaining more risk on their own books, and this change presents reinsurers with a challenge. Primary insurers are now healthier financially than they were five years ago. Mergers, too, are creating bigger direct insurance companies with stronger balance sheets and a broader geographic spread of risk. European integration can only reinforce that trend. Reinsurers are being forced to look elsewhere to make up the gap in income.

Both Munich Re and Swiss Re have been offering more new services to clients, including insurance-related computer software. Swiss Re recently sold Capsco, the software business it acquired in 1987, to PAXUS, the Australia-based market leader. Swiss Re also wants to balance its more volatile reinsurance business by expanding direct underwriting of personal lines, which is a more stable business. Direct insurance contributed almost one-third of reported group profits in 1988. Munich Re also has large stakes in direct insurers, including Germany's largest general insurer (Allianz), its largest life assurer (Allianz Leben) and a large private health insurance company.

The terms on which much reinsurance is ceded are also changing, with far-reaching consequences. There are two basic approaches: a reinsurer can agree to take a proportion (quota-share) of a block or stream of business from the direct insurer. In this case the reinsurer pays a percentage of claims and accepts the corresponding percentage of whatever premiums the direct insurer charges, net of a contribution to the direct insurer's expenses. Conversely, the reinsurer can agree to pay claims above a certain level (and often up to another level) to give excess-of-loss cover in exchange for a negotiated premium. In some markets and classes, there seems to be a distinct trend away from quota-share towards excess-of-loss.

If the trend towards excess-of-loss proves significant and durable, it will not only improve reinsurers' profits, but also give them greater control over prices in the direct market. With quota-share deals, the reinsurers accept the primary insurer's judgment; with excess-of-loss deals, reinsurers set their own premium rate. In theory, reinsurers exercise significant influence in that primary insurers are unlikely to write business at a price they know they cannot pass on. That influence seems less decisive in practice.

For example, over half the premium income of the world's biggest reinsurer, Munich Re, comes from its domestic market, Germany. Yet Munich Re has been unable to stem the fall, in real terms, of premium rates for individual fire insurance in that market; the most it has achieved is to tighten the terms of fire insurance by excluding pollution risk, for example. Whether reinsurers set or take prices depends, in the end, on how much they and their competitors want the business.

Competition is sharpest in London, the centre of reinsurance and direct international large risks, especially marine and aviation. Over the years, London's share of this business has declined as other economies have grown faster. Some reinsurers, hit financially by the U.S. business they accepted through London in the early 1980s, are writing more of their U.S. business in the U.S., which is closer to the risks. Certain specialities are gravitating elsewhere. Some 70% of the aviation business written in Paris is on non-French risks, for example. The big Anglo-American international brokers like Marsh and McLennan, C.T. Bowring, and Sedgwick are spreading their offices around the world.

London still has the world's biggest and most professional concentration of brokers and underwriters. Insurance, the least-sung part of the U.K.'s financial establishment, contributes the greatest part of earnings overseas, though these fell in 1987 and 1988. Both Lloyds and the London market as a whole, although recently suffering from high losses, are introducing new technology and speedier procedures in a bid to counter the opening and integration of the European insurance markets.

The reinsurance subsector has a high loss ratio. Reinsurance is the high-risk segment of the industry, in which potential profits or losses can vary widely every year. As a result, INPUT's market forecast for the reinsurance subsector shows a lower growth figure than for the other two subsectors.

The reinsurance market forecast is shown in Exhibit III-3.

EXHIBIT III-3

Software and Services Market Insurance Sector—Reinsurance, Europe

Industry-Specific Delivery Modes	U.S. Dollar Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	80	0	80	2	90
Turnkey Systems Applications	170	5	180	8	265
Software Products	100	12	110	10	175
Professional Services	290	0	290	10	470
Network Services	55	15	65	15	130
Systems Operations	10	15	12	17	26
Systems Integration	30	10	33	12	58
Industry Sector Total	740	4	770	9	1,200

Note: Cross-industry software products and services are omitted from this forecast.

C European Software and Services: Delivery Modes

The complex structure of insurance companies presents considerable challenges for software and services vendors. Tied or independent agents, brokers and banks all sell insurance in most European countries, but the mix is varied. Tied or semi-tied agents prevail in mainland Europe. Agents and salespeople sell more than 75% of the insurance in Germany and more than 80% in Italy. In France many of the agents have exclusive distribution rights in their territories and have hampered companies looking to streamline or broaden distribution. In Spain, bank subsidiaries dominate the sale of life assurance, whilst in the similar markets of the U.K. and the Netherlands, independent agents and brokers play a large role.

The fragmented nature of the insurance industry means that the software and services market has distinct national characteristics. France and Belgium concentrate on major in-house developments, and the U.K. and Germany look more towards networks, packaged solutions and turnkey systems. The strategic positioning occurring in Europe means that insurance companies will continue to invest in systems, networks and software as a result of competitive pressures that force insurers to sacrifice short-term earnings in favour of strategic investment decisions in pursuit of diversification. This, for software and services vendors, is the key challenge, and a major opportunity for professional services companies.

The entry of banks into the insurance companies' traditional markets is causing insurance management concern. The need to compete with the banks on a technological level has become increasingly important as two factors become clear:

- The growing base of competition for the general consumer market
- The growing sophistication of the corporate customer

Information technology will become increasingly important in the development of a marketing strategy. As discussed earlier, the prospect of a free European internal market in insurance has led to insurers seeking to grow by merger or acquisition simply to survive.

However, INPUT anticipates that the creation of a pan-European insurance market is still likely to be a drawn-out affair. The European Commission may have issued a directive allowing cross-border trade in big risks—non-life insurance for companies with more than 500 employees or a \$25 million turnover—but for this directive to be workable depends on the following two factors:

- The existence of appropriate distribution
- The existence of unmet insurance demands in Europe

Cost containment is a key issue. With insurance companies in Europe expanding by mergers and acquisitions, there is a need to boost productivity and improve revenues; vendors should consequently be looking to offer additional services as a way to maintain competitive edge and to improve productivity.

One of the key areas is risk management: financial analysis programs, decision support tools and electronic information services providing actuarial and investment information are some of the products and services that somewhat reduce insurers' risk exposure. Areas of opportunity related to risk management include:

- Financial analysis programs
- Decision support tools
- Electronic information services

The IS managers within insurance companies are faced with a series of management challenges: the central objective of providing services to user groups is hindered by the need to improve revenues and cut costs. With information handling being such a key activity in insurance, IS managers are looking for flexible systems that can be expanded and modified for long-term usability.

This requirement is particularly noteworthy given the huge backlog of applications at insurance companies: users constantly need new applications, enhancements to existing ones and maintenance of existing operations. Furthermore, with consolidation occurring as a result of acquisition, IS managers are finding that they are called upon to integrate systems as well as establish decentralised IS functions. In addition, there is a chronic shortage of skilled staff throughout Europe. As a result, INPUT is anticipating high growth in the professional services sector as more and more companies turn to third parties to help carry out these sea changes.

The overall forecast for each delivery mode for software and services is given in Exhibit III-4. Each sector is discussed separately in the following paragraphs.

EXHIBIT III-4

Software and Services Market Insurance, Europe

Industry-Specific Delivery Modes	U.S. Dollar Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	540	6	570	7	810
Turnkey Systems Applications	800	11	890	13	1,640
Software Products	460	17	540	17	1,180
Professional Services	1,580	11	1,760	13	3,310
Network Services	200	20	240	21	630
Systems Operations	65	15	75	18	170
Systems Integration	130	19	155	21	405
Industry Sector Total	3,800	12	4,250	14	8,150

Note: Cross-industry software products and services are omitted from this forecast.

1. Processing Services

Processing services includes transaction processing services, utilities services and other processing services.

- Transaction processing services utilise vendor equipment and software at the vendor or customer site, and may be interactive or remote batch orientated. Transaction processing involves manipulation of customer-owned data.
- Utilities services provide access to basic software tools that enable users to develop their own solutions.
- Other processing services include carry-in batch processing, data entry services and disaster recovery/backup services.

As insurance companies handle more of their processing needs internally, the processing services market has shown slow overall growth. However, in the less developed markets of southern Europe, growth will be above the industry average. INPUT projects growth for processing services within the insurance industry over the period 1992-1997 at a CAGR of 7%.

One area of the processing services sector that is likely to experience significant growth rates will be provision of services that, rather than having an immediate and tangible effect on a company's business performance, are aimed at supporting the increasingly complex technology that over 80% of businesses say they now depend upon. This area is disaster recovery, especially viable now because only about 40% of companies have any contingency plans at all for disaster recovery, despite the fact that many companies would be out of business after one day without their main computer.

2. Turnkey Systems

Turnkey systems provide the integration of systems software and packaged and customised applications software with CPUs, equipment and peripherals. Turnkey systems are packaged and delivered as a complete application solution.

The turnkey systems market in the insurance industry is extremely diverse. The German market is very well developed and Siemens Nixdorf is the clear market leader. However, despite a growth rate of 13%, the existence of large insurance companies whose own IS departments handle the specific requirements of their own organisation in-house means that the turnkey systems market has peaked. Another reason for the peak is the fact that these organisations already own their computer equipment and prefer to install packaged or custom software.

Growth will occur predominantly in southern Europe in the form of microcomputer systems for agents. Information systems for agents in the field increased Nixdorf's lead in the insurance market. Through compliance with national insurance industry requirements in countries other than Germany, Siemens Nixdorf is geared to achieve further growth in this sector.

Faced by the dismantling of trade barriers in the service sector in the single European market and growing competition for single-source financial services, insurance companies are under increasing pressure to widen their product portfolios and seek new customers. Insurers also need to sharpen their response to growing customer requirements for improved products and services.

3. Applications Software Products

Expenditures on applications software products by the insurance industry are expected to have a 17% CAGR over the next five years. Many insurance companies are handling their own information processing requirements in-house through IS departments and, as a result, IS departments purchase applications when the available products meet their requirements. The types of industry-specific applications software products available to the insurance industry are extensive. Products are available that handle most types of policies, claims administration, billing, client profiling, actuarial and investment analysis, decision support and management reporting.

Insurers lag behind the banking and manufacturing industries in systems applications. They have been slow to bring information technology managers to positions of influence. The tendency is for boards or decision-making groups to decide what they are going to do and not to tell the information services division soon enough. Some of the biggest companies still don't have a client database, but instead have a contract database. The older systems designed in the 1960s and developed in the 1970s were built around processing insurance contracts. The focus today is on servicing clients or intermediaries. The need to rewrite or replace software represents a substantial investment and is expected to generate above-normal growth in the mainframe market.

Leading software and services vendors in the European insurance sector are embracing IBM's development of an Insurance Application Architecture (IAA) for future systems. IBM sees a clear demand emerging among its customers for mixing and matching applications from different sources.

The sheer bulk of information needed to support insurance business operations has always favoured the use of databases on large mainframes. Many insurance companies suffer from having built monolithic applications over a period of 10 to 20 years. In a time of international expansion, these software systems are often unsuitable for porting to new business locations.

The difficult task facing many insurers is how to update their applications and migrate smoothly away from the software they have depended upon for so long. Migration is the key to future success and needs to be carefully defined case by case.

A second challenging task is to provide flexible applications software that will allow insurance companies to implement and integrate systems that reflect their own unique operations and support their own competitive edge.

The idea that all of today's applications can be integrated together has become too expensive and risky to implement. Development costs must be lowered. Applications software products must be very rich in function, but at the same time readily tailored to individual needs.

The new world promised by IBM with IAA has many attractions, as it aims to create an environment in which both these tasks—migration and integration—become easier to manage:

- IBM is investing in its ability to help customers manage the transition problem both by establishing standards with IAA and by creating centres of IBM excellence in the professional services required to exploit such an architecture: staff with the rare mix of skills necessary to act as insurance system architects.
- IAA seems to be much more than simply SAA dressed up for the insurance sector. The application architecture is largely platform independent—this applies to both the data model and the function model. For example, some clients are considering UNIX implementations of IAA, though this is not seen as a general trend among insurance companies.
- If interface standards are complied with, then it should be feasible (and highly desirable) to break down application systems into smaller, more manageable projects. With systems requirements becoming ever larger and more complex, the concept of fragmenting large application systems into smaller application modules (a rather different form of application downsizing) looks very attractive.

The quality of service an insurance company can offer its clients is directly related to its investment in good quality information systems. IAA is intended to provide a solid foundation for such systems in the future with a feasible migration path from today's systems.

The leading pan-European vendors all see IAA as a catalyst for business growth and a basis for new product developments. IBM has a stake in several of the lead applications software products vendors and is relying on them to provide the applications customers need in a way that will meet the demand for mixing and matching software from different sources.

IBM is not investing directly to produce insurance application products itself, but is investing in providing its clients with:

- A manageable system development path within an architectural framework
- The supporting professional services with which to map the path out, and if necessary manage its implementation with a systems integration contract
- A choice of national and international applications from which to mix and match unique solutions

Key to IBM's success will be its ability to co-operate fully with its chosen partners, helping to implement solutions for the profit of customers and vendors alike.

The major pan-European vendors of software products to the insurance sector are PAXUS Corporation, Policy Management Systems (PMS) Corp. and The Continuum Company. These companies are profiled in Chapter IV. Other lead software specialists such as Circea (France) or Sherwood (U.K.) have generally gained a strong position in a niche national market.

Exhibit III-5 shows the forecast for applications software products by equipment platform. Mainframe applications are expected to grow faster than those on midrange systems, reflecting the dominance of mainframe usage in the large insurers and the surge in demand for package-based application solutions.

EXHIBIT III-5

Applications Software Products by Equipment Platform Insurance, Europe

Industry-Specific Applications Software	U.S. Dollar Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Mainframe	100	6	105	11	180
Minicomputer	100	13	115	10	185
Workstation/PC	260	23	320	21	815
Total (rounded)	460	17	540	17	1,180

Within the insurance industry, expenditures for microcomputer applications will grow faster than expenditures for mainframe and minicomputer applications or any other type of information service. The information intensiveness of insurance has resulted in a very high penetration by microcomputers. For example, laptop computers are used by agents to provide claim and policy information, whilst databases containing actuarial information can be downloaded to these microcomputers so that a policy can be generated on the spot during a sales call.

As a paper-intensive industry, insurance is a key area for optical image storage: Legal & General Assurance Society was the first U.K. insurance company to install the Phillips Megadoc optical image storage system. A number of continental European insurance companies already use Megadoc, which is able to hold 50,000 A4-sized document replicas in digital form on a single optical disk the size of a long-playing record. Optical recording systems are finding favour where companies need to refer to original document facsimiles quickly. Instead of storing the original paper, new documents are scanned and the resulting digital signals are recorded on disk.

4. Professional Services

Professional services include information systems consulting, custom software development, education and training. Systems integration and systems operations (formerly termed facilities management) activities, which have in the past been reported as part of professional services, are treated separately in this section of this report.

Professional services will have a 13% CAGR during the next five years, growing from \$1,580 million in 1992 to \$3,300 million in 1997. Expertise in custom software development and systems consulting will be required, mostly to supplement internal IS resources.

A key area of opportunity is developing systems so that insurance companies can offer new, sophisticated products and services to their customers. These new products and services may not necessarily demand new equipment, but will demand new systems to run them. New systems is an area where third-party vendors could offer a well-integrated solution.

With much processing being done in-house and with a considerable part of the software products sector being systems software delivered by equipment vendors such as IBM, the major opportunities for revenue in insurance are in the area of custom software delivered as professional services.

With development costs a consideration, the insurance market wants standard software product solutions, or rather kernel products that can be readily customised. For the insurance brokers and agents, standard packages and turnkey systems will be readily made available.

Although many vendors are looking to develop and modify their standard solutions for larger insurance companies, the insurance companies themselves are increasing their size through mergers and acquisitions. Consequently, the industry is demanding the best of both worlds—applications packages configured as integrated custom solutions. This is the major challenge for professional services companies—developing a flexible approach to selecting "best of breed" packages to mix and match with custom-developed solutions in a well-integrated system.

5. Network Services

Network services include network applications (managed data networks, electronic information exchange—EIE, electronic data interchange—EDI) and electronic information services—EIS.

- Managed data networks are network transmission facilities that are augmented with computerised switching and features such as packet switching, terminal interface and error detection and correction.
- Electronic information exchange is also known as electronic mail and includes facsimile transmission (FAX), voice mail, voice messaging, and access to Telex, TWX, and other messaging or bulletin board services.
- EDI is application-to-application electronic communication based on established business document standards. Specialised translation software is typically used to convert documents between internal file formats and external standards.
- EIS includes databases, news services and videotex services. Databases provide specific information via terminal-based inquiry. Available information includes stock prices, legal precedents and economic indicators. News services offer current information, either general or for

a specific category. Videotex services provide interactive access to databases and offer the inquirer the capability to send as well as receive information.

Insurance companies are relying more on network services, especially EIS (on-line databases) and insurance industry networks (RINET, BROKERNET and LIMNET in the U.K.; ASSURNET in Belgium and France; and MEGANET in Germany, for example). Although network services appear to have a natural fit with an industry that is totally information based, take-up of network services has been slower than expected.

Network services will significantly reduce distribution costs for markets in which brokers are a well-established part of the industry structure. Improved speed of quotation is the other major benefit, but this is viewed by many users as a means of retaining existing clients in the face of fierce competition rather than as a way of winning larger volumes of new clients.

As a result, expenditures in network services are still forecast to increase at 21% per year over the forecast period. Exhibit III-6 outlines the growth expected in network services, including a breakdown between network applications and EIS for the insurance sector.

EXHIBIT III-6

Network Services Insurance, Europe

Industry-Specific Applications Software	U.S. Dollar Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Electronic Information Services	115	9	130	11	210
Network Applications	85	29	110	31	420
Total (rounded)	200	20	240	21	630

A worldwide insurance network contract was awarded in 1988 by the co-operative formed by eight of Europe's largest reinsurance companies, including the U.K.'s Mercantile and General Reinsurance. IBM was chosen as the network supplier, beating GEIS to the multimillion-dollar contract, for its Reinsurance and Insurance Network (RINET) project.

The U.K. insurance industry has a well-established active broker market, which is a natural candidate for electronic data interchange (EDI):

- INS runs the BROKERNET motor insurance system.

- Istel Financial Services and Misys Dataller, a software house specialising in insurance systems, have a joint marketing venture to provide EDI between intermediaries and insurance companies, also in the motor insurance area.
- IBM provides the network for a development in insurance EDI that could lead to a revolution in the way intermediaries deal with insurance companies.
- Digital has a 20-broker pilot project called Multi Transact Services (MTS), a joint venture with Scottish Life, CIBC Mortgages and National Home Loans.

The launch of an IBM insurance network running on IBM's RISC System/6000 (based on the IBM Information Network and INS' Tradanet network using software from Policy Master) was perceived as a defensive measure to protect the U.K. insurance industry from the acquisitive French. The network will be used for VBS (Validated Business Systems). VBS is effectively an EDI service—using BROKERNET—that validates all transactions at the point of sale and conforms to the underwriters' professional code.

The ICL/GEIS joint venture INS (International Network Services) offers BROKERNET, a form of electronic postal service that allows the fast, easy exchange of proposal forms, midterm adjustments, renewals and NCD proofs between intermediaries and insurers. The joint venture has strong support from an insurance industry panel formed to steer INS's development. Members include insurance companies, Lloyds' syndicate systems suppliers, bureaux and intermediaries themselves.

In France, Assurnet has enabled the French to establish a link between brokers and insurance companies, providing a connection to the large insurers' exclusive distribution networks. Assurnet has been developed under the auspices of the FFSA (Federation Française des Sociétés d'Assurances). Assurnet complements the Celias (Centre de Liaison Informatique de l'Assurance) network and links twenty companies and fifteen large brokers. However, Celias was too expensive for the smaller brokers and caused compatibility difficulties with UNIX and Prologue systems.

Assurnet was chosen by the FFSA because Assurnet already linked 35 companies (80% of the market) to over 700 brokers. The software is in French, German, Dutch and English and is perfectly placed to take the opportunities afforded by 1992. The French operator will be GIA (Groupement Informatique de l'Assurance). GIA will use 90 people, an IBM 3090 200 and GTM OSI, the IBM software used for accessing X.25 networks.

The software has to be customised to handle distinct French features, such as different postal codes, vehicle registration numbers and the ability to develop messages. However, there are no plans to link with banks or the government network.

Les Mutuelles du Mans, the top French mutual insurance group, chose Bull to equip Mutuelles' network of 1,200 branch offices with EDP systems before 1993. Bull will supply a Bull DPS 8000, 600 of the new range of Bull DPS 6 Plus minis and more than 2,000 Bull Questar 210 terminals. The contract is worth over FF100 million and is part of the Ambition 1992 EDP project launched by Mutuelles du Mans to promote the use of new management resources and software.

In mainland Europe, a consortium of European manufacturers and users, led by NV Philips, has begun a four-year project to develop an electronic case handling system for the insurance industry. The system will use broadband communications to accelerate by some 50% the process of handling insurance policies across Europe. The project team aims to develop a system to let insurance companies move voice, data, text or video information from a company to the public switched network at up to 100 megabits per second. From there, the information would be transferred at 2 mbps across the public network to other sites. The project is also designed to reduce paper use, given that the European insurance industry uses up to 40 million trees a year for paper.

6. Systems Operations

Systems operations (formerly termed facilities management) vendors provide a complete operating information system for customers—including equipment, software, personnel and facilities.

Systems operations involves the operation and management of all or a significant part of the user's information systems functions under a long-term contract. These services can be provided in either of two distinct submodes:

- Professional services, where the vendor provides personnel to operate client-supplied equipment
- Processing services, where the vendor provides personnel, equipment and (optionally) facilities

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

can also be referred to as "resource management" or "facilities management."

There is so far very little activity by insurers to outsource their systems operations. But they are more aware than most IS users of their overwhelming software maintenance workload. INPUT forecasts a market rising from \$75 million to \$170 million between 1992 and 1997. This CAGR of 24% is expected as a result of strong marketing from major systems operations vendors. They are beginning to attract insurance users' attention with the aggressive financial cases they are making—offering significant savings on existing in-house operations with a guaranteed level of service. When insurers are having to cut costs, this combination can be a winner.

One or two of the larger full-service vendors offer an attractive three-part combination of services:

- A systems operations contract that includes maintenance of existing live applications
- An education and training package for re-skilling in-house staff freed from the heavy workload of supporting old live applications
- A systems development and integration service to help with the development of, migration to, and implementation of the next generation of applications

7. Systems Integration

Systems integration is the delivery of large, multidisciplinary, multivendor systems that incorporate some or all of these functions: systems design, programming, integration, equipment, networks, installation and acceptance. Systems can encompass multiple-product delivery modes.

The U.K. Financial Services Act created a morass of statutory regulations to wade through. Major government reforms in the field of pensions have created a rush of new business and an entirely new set of policy requirements. These changes have come on top of existing development work, and often double the programming requirement for companies that are halfway through a change of systems. A similar state of flux is being created by regulatory changes within each country market.

Vendors must have personnel with insurance experience. Equipment vendors, in particular, have failed to find such people in the past. Insurance companies need products and services that are delivered on time. With the pressures on insurance IS managers to improve services and stay within budget, the challenge to find skilled staff will remain key to the success of vendors.

Vendors need to decide whether to target the standard solution market—the less mature and niche-oriented markets—or custom solutions for large conglomerates. Networking and integration skills will have to cover LANs for the branches and WANs for interenterprise demands.

D

European Country Markets

1. France

France is the largest national market for software and services in Europe, and represents some 24% of the total European market. It is the third largest insurance market in Europe and the fifth largest worldwide. French banks have made considerable inroads into the life insurance market, which has grown rapidly over the last two years. The market is dominated by a few large state-owned and a few mutual insurers. Nearly one-quarter of all premiums for French insurers came from overseas, a result of widespread acquisitions.

These factors combine to create the market detailed in Exhibit III-7. INPUT anticipates that the French market will grow from \$0.9 billion in 1992 to \$1.6 billion in 1997 at a CAGR of 14% over the forecast period and continue to provide a lead in the area of custom software development and network services. Mergers between domestic companies have been most conspicuous in France, where the struggle for control of insurance business has provided vivid financial battles in recent years.

EXHIBIT III-7

Software and Services Market Insurance, France

Industry-Specific Delivery Modes	FF Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	620	8	670	7	950
Turnkey Systems Applications	750	11	830	13	1,500
Software Products	470	17	550	17	1,200
Professional Services	1,730	13	1,950	12	3,450
Network Services	180	22	220	22	600
Systems Operations	60	17	70	21	180
Systems Integration	150	20	180	22	480
Total (rounded)	3,950	13	4,450	14	8,400

Note: Cross-industry software products and services are omitted from this forecast.

In France, many of the agents have exclusive distribution rights in their territories and require software tools to enable them to compete with the large companies and banks looking to streamline or broaden distribution. For example, the banks doubled their share of life and savings policy premiums to 38% in the ten years to 1988. Crédit Agricole wants to use its experience to develop non-life products, as does Crédit Lyonnais, whose life assurance subsidiary is among the top ten in France.

Keen to extract maximum advantage from their high-tech equipment and information networks, French banks and insurance firms are joining forces on an increasing scale. UAP, France's biggest insurance group, and Banque Nationale de Paris (BNP) are looking to bring their activities together. La Société de Banque de L'Orléanais, which belongs to the Indosuez group, allied with Mutuelles Regionales d'Assurances, a leading insurance group, to sell financial products together and to investigate other possibilities for joint ventures.

This spate of mergers and acquisitions means that incompatible systems have to be rationalised whilst IS managers are trying to dramatically redesign systems to meet with the demands of a single European insurance market. With the types of services traditionally delivered to the insurance industry needing to be modified and/or radically redesigned, there are considerable opportunities for software and services vendors.

The banks are planning to increase their penetration of the life sector and start making moves in non-life. French insurers are particularly well positioned to continue their international expansion and diversification within the insurance market. These trends should create many new opportunities for IS vendors over the coming five years.

2. Germany

The German insurance market is the largest in Europe, as it is for industry-specific software and services—slightly ahead of France and the U.K., as shown in Exhibit III-8. The dollar value is about \$0.85 billion, growing to nearly \$2.0 billion by 1997, a CAGR of 16%. This reflects the expectation of a rapid acceptance of the use of external products and services in insurance, in contrast to past years in which in-house IS resources have dominated.

EXHIBIT III-8

Software and Services Market Insurance, Germany

Industry-Specific Delivery Modes	DM Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	210	5	220	6	300
Turnkey Systems Applications	310	13	350	15	700
Software Products	150	17	175	18	400
Professional Services	470	17	550	17	1,200
Network Services	45	22	55	29	200
Systems Operations	20	25	25	19	60
Systems Integration	60	17	70	21	180
Total (rounded)	1,250	16	1,450	16	3,050

Note: Cross-industry software products and services are omitted from this forecast.

Cost reductions and changes to the state national insurance schemes are the two primary driving forces for German investment in software and services. The turnkey systems sector is expected to continue to be the main recipient of IS expenditure. Germany's two important domestic equipment vendors—Siemens Nixdorf and Digital's new acquisition Mannesmann Kienzle—are both major software and services vendors in the German insurance market.

Banks have only a small market share in the German insurance market, but can be expected to steadily increase it, albeit to nothing like the extent in France. Tied or semi-tied agents sell more than 75% of the insurance in Germany and as a result, the number of mergers and acquisitions means that incompatible systems between banks, insurance companies and agents will have to be rationalised. Meanwhile, IS managers are trying to dramatically redesign systems to meet the demands of a single European insurance market. With the types of services traditionally delivered to the insurance industry needing to be modified and/or radically redesigned, there are considerable opportunities for software and services vendors.

3. United Kingdom

The U.K. insurance market represents over 25% of the European market, second only to Germany. The resulting industry-specific software and services market is ranked third behind Germany and France, totalling \$0.8 billion in 1991. Recent recessionary economic pressures and heavy insurance losses raise doubts about any return to explosive growth in the sector. However, participating vendors in the relatively mature U.K. market should be in a strong position to exploit other European insurance markets in the 1990s.

INPUT anticipates that the U.K. insurance software and services market will show a CAGR of 11% over the forecast period, with strong growth in applications software products and systems integration as the market makes further commitments to customer-oriented system architectures and replaces many old in-house-developed applications. Network services will remain important in servicing the needs of the myriad of brokers, independents and agents in the U.K. The U.K. market forecast is given in Exhibit III-9.

The maturity of the U.K. market is reflected in the widespread use of IT to support marketing activities. This includes good progress with customer-oriented administration systems and with the use of direct marketing databases.

Heavy losses announced by Lloyds and other U.K. insurers have changed the emphasis for IS spending away from new product development and towards distribution and cost management.

EXHIBIT III-9

Software and Services Market Insurance, United Kingdom

Industry-Specific Delivery Modes	PS Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	37	3	38	3	44
Turnkey Systems Applications	70	7	75	7	105
Software Products	40	13	45	15	90
Professional Services	175	9	190	11	325
Network Services	31	13	35	15	70
Systems Operations	10	10	11	13	20
Systems Integration	15	13	17	15	34
Total (rounded)	380	8	410	11	690

Note: Cross-industry software products and services are omitted from this forecast.

In the U.K., independent agents and brokers have always had a big role. The demand for integrated networks and systems amongst the large financial conglomerates is likely to alter this situation, especially in areas where sales commissions are high. The insurers are expected to continue merging operations, concentrating businesses in order to compete more effectively. This will inevitably lead to a reduced role for the smaller brokers.

The U.K. Financial Services Act has given a preliminary indication of what can happen when regulation changes in such an information-intensive industry. Insurance companies estimated the cost of the Act at between 20-40 person-years of computing effort, a cost of upwards of £1-10 million in systems updates, as much again in user effort and documentation and the ongoing operational costs of extra printing.

Although the banks have been participating in the insurance sector for at least ten years, they have not achieved the penetration of their counterparts in France, but they still have strong ambitions in the sector as they extend their portfolios of financial services.

4. Italy

Italy's insurance market lags significantly behind the other major European countries and is viewed as relatively immature but offering good growth potential. The Italian insurance industry-specific software and services market is forecast by INPUT to rise from \$0.4 billion in 1992 to nearly \$0.8 billion in 1997, a CAGR of 13% over the forecast period. This is a significant reduction from last year's forecast of 24%. Although U.S. vendors have a strong presence in the Italian market, Finsiel, the largest Italian domestic vendor (83% state-owned, 17% by Banca d'Italia; Finsiel specialises in processing services and bespoke software development) and Olivetti (with its systems, networks and information services) are both gearing up to the single European market. The Italian market forecast is given in Exhibit III-10.

EXHIBIT III-10

Software and Services Market Insurance, Italy

Industry-Specific Delivery Modes	Lira Billions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	57	5	60	7	84
Turnkey Systems	105	10	115	10	185
Applications					
Software Products	55	18	65	18	150
Professional Services	170	12	190	13	350
Network Services	16	19	19	21	50
Systems Operations	4	25	5	21	13
Systems Integration	14	21	17	21	45
Total (rounded)	420	12	470	13	880

Note: Cross-industry software products and services are omitted from this forecast.

Italian insurers expect that foreign competitors will increase their share of the insurance market from around 25% to 35% over the period forecast. With a high level of merger and acquisition activity, incompatible systems will have to be rationalised at the same time that IS managers are trying to dramatically redesign systems. As the market grows, the number of major players vying for a lead share is likely to increase as a result of both national concentration and international competitors entering the market.

5. Spain

Spain ranks about seventh among European country markets for insurance. However, its growth prospects are attracting a lot of investment and INPUT forecasts an industry-specific software and services market of \$0.2 billion in 1992 rising to \$0.5 billion in 1997 at a CAGR of 18%, as shown in Exhibit III-11. The emphasis will continue to be on smaller distributed systems at the branch level, rather than the large centralised mainframe traditions of leading European insurers generally.

EXHIBIT III-11

Software and Services Market Insurance, Spain

Industry-Specific Delivery Modes	Pta Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	4,400	9	4,800	11	8,100
Turnkey Systems Applications	3,500	20	4,200	20	10,400
Software Products	3,100	23	3,800	22	10,200
Professional Services	6,400	22	7,800	17	17,000
Network Services	830	20	1,000	22	2,700
Systems Operations	380	21	460	21	1,200
Systems Integration	290	52	440	42	2,500
Total (rounded)	18,900	19	22,500	18	52,100

Note: Cross-industry software products and services are omitted from this forecast.

Spain has the largest penetration by foreign vendors of all European markets, both in software and services and in insurance. Half of the capital of the Spanish insurance industry is foreign-owned. The leading 76 insurers, who account for the bulk of the sector, reported over 16% growth in the sector during 1990, well ahead of GDP growth. The market is still under-regulated in European terms, with much higher than average rates of financial failure or difficulty among Spanish insurers.

6. Switzerland

The Swiss insurance market is the fifth largest in Europe and is highly saturated. This has resulted in emphasis on international expansion among leading companies, with Switzerland now a net-exporter of insurance. The market for insurance industry-specific software and services, shown in Exhibit III-12, is estimated to increase from \$0.2 billion to \$0.4 billion, a CAGR of 14%, between 1992 and 1997.

EXHIBIT III-12

Software and Services Market Insurance, Switzerland

Industry-Specific Delivery Modes	SF Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	37	8	40	8	60
Turnkey Systems Applications	50	10	55	17	120
Software Products	30	17	35	15	70
Professional Services	90	17	105	11	180
Network Services	14	29	18	20	45
Systems Operations	4	0	4	20	10
Systems Integration	7	14	8	16	17
Total (rounded)	230	14	265	14	500

Note: Cross-industry software products and services are omitted from this forecast.

A dozen insurance companies account for 80% of the Swiss market, which until 1989 was largely protected by a cartel, now dismantled. As with most other European countries, a top priority is establishing a future IT strategy based on a flexible applications architecture.

7. Benelux

Belgium, the Netherlands and Luxembourg represent about 7% of the European insurance market. The forecast for the region is shown in Exhibit III-13. In 1992 the market for insurance industry-specific software and services is estimated to be \$300 million, growing at a CAGR of 14% to \$600 million by 1997.

EXHIBIT III-13

Software and Services Market Insurance, Benelux

Industry-Specific Delivery Modes	BF Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	1,200	8	1,300	8	1,900
Turnkey Systems Applications	1,600	16	1,850	15	3,700
Software Products	1,100	32	1,450	12	2,600
Professional Services	3,800	3	3,900	15	7,900
Network Services	470	21	570	18	1,300
Systems Operations	130	15	150	13	280
Systems Integration	220	18	260	22	700
Total (rounded)	8,520	11	9,480	14	18,380

Note: Cross-industry software products and services are omitted from this forecast.

In Belgium about half the market is held by French insurers, compared to only 10% of national Belgian companies. This differs strongly from the Netherlands, where national Dutch insurers have a 90% market share and the leaders generate around half their premiums outside the country.

8. Scandinavia

The Scandinavian countries account for about 8% of the insurance market in Europe. It is a mature market with considerable past investment in IS. Exhibit III-14 shows that the Scandinavian market for insurance industry-specific software and services is valued at \$0.3 billion in 1992 and is forecast to rise to \$0.6 billion, a CAGR of 13%, by 1997.

EXHIBIT III-14

Software and Services Market Insurance, Scandinavia

Industry-Specific Delivery Modes	SK Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	220	7	235	10	380
Turnkey Systems Applications	390	15	450	14	880
Software Products	220	14	250	14	480
Professional Services	690	10	760	11	1,300
Network Services	95	21	115	21	300
Systems Operations	30	17	35	16	75
Systems Integration	20	25	25	29	90
Total (rounded)	1,665	12	1,870	13	3,505

Note: Cross-industry software products and services are omitted from this forecast.

Banks are expected to gain a stronger foothold in the distribution side of the market during the period. Despite good business growth prospects, particularly in the life market, there is unlikely to be any heavy new investment in IS to support this.

9. Rest of Europe

EXHIBIT III-15

Software and Services Market Insurance, Rest of Europe

Industry-Specific Delivery Modes	US Dollar Millions				
	1991	Growth (%) 1991-1992	1992	CAGR (%) 1992-1997	1997
Transaction Processing	8	0	8	7	11
Turnkey Systems Applications	26	8	28	12	50
Software Products	18	17	21	19	50
Professional Services	70	7	75	11	125
Network Services	14	21	17	21	45
Systems Operations	1	0	1	15	2
Systems Integration	3	33	4	20	10
Total (rounded)	140	10	155	14	295

Note: Cross-industry software products and services are omitted from this forecast.

All the forecasts discussed in this section are available in more detail in Appendix B.

IV Competitive Analysis

This section identifies the key challenges facing software and service vendors and profiles a number of leading vendors.

A

The Market Challenge

Investment in IT in the insurance sector is expected to rise from around 10% of business operating expenses to some 15% over the next five years. INPUT forecasts that user expenditure on software and service will rise a total of 120% over the same period.

The already high level of expenditure means that there is a huge existing investment in business-critical applications and business information in the insurance industry. The major challenge facing vendors and users alike is how to exploit both the past investment and the newer emerging technologies to the maximum benefit of the client's business in an increasingly competitive European market.

The challenges are summarised in Exhibit IV-1. Equipment platforms are changing ever more rapidly, causing users to continually re-visit decisions as to which software to run where and on what type of system. System software is moving towards the client/server architectures more appropriate for many of today's fragmented and distributed businesses. It is also becoming more portable, considerably broadening and perhaps confusing the choice of hardware platform.

EXHIBIT IV-1

The Insurance Challenge Application Migration

- Professional Services
Develop new, support old
- Applications Software
Mix and match, new and old
- System Software
Client/server, multiplatform
- Hardware Platform
Downsizing, rightsizing

Application packages conforming to standards and rich in function are becoming available from a choice of suppliers, even in the mainframe arena, which has been traditionally light on standard packages. These new applications will in nearly every case have to coexist with existing old, in-house-produced applications.

Insurers are seeking professional services vendors who can support them in their migration from old to new systems. Few vendors have yet extended their activities beyond those relating to new custom software development, but there is a pent-up demand for more operational software support, especially for in-house-produced applications.

Exhibit IV-2 shows the top issues affecting European users (IS managers) in priority order. It is refreshing to observe that IS architecture and strategy have become such integral parts of the business development process. They are now clearly seen as essential foundation stones within such information-intensive businesses as insurance.

EXHIBIT IV-2

Users' Important IS Issues Insurance, Europe

- Adapting to "1992" changes
- Developing future systems architecture
- Developing strategic information plan
- Improving productivity with technology
- Improving customer service

Productivity—better known as cost control or cost cutting—is still a higher priority than customer service improvement as a major concern. It may reflect a belief that protecting profits is more important than growing market share in these times of change and overexposure.

The issue of improving customer service revolves around three factors:

- The ability to rapidly develop new insurance products that meet perceived client needs
- The ability to selectively market such competitive products, using, for example, database marketing techniques
- The ability to provide rapid response to client requests for quotations, which is the main driving force for interactive network services

INPUT's research identified the problems listed in Exhibit IV-3 as of particular concern to IS management. All of them represent areas where vendors should find business opportunities if they can offer sympathetic help.

EXHIBIT IV-3

Users' IS Problems Insurance, Europe

- Integrating acquired businesses
- Internal resistance to change
- Old products
- Lack of trained staff

The problems associated with merging the IS systems of acquired businesses resulting from the spate of recent insurance takeovers came at the top of the list. Second came the problem of change management, in which some IS vendors already specialise. Internal resistance to change is seen as a significant barrier to progress. The continued support of old insurance products (with old applications and databases) identifies the applications maintenance problem already alluded to.

INPUT research suggests that over 65% of IS staff in the insurance sector are dedicated to the ongoing maintenance and support of existing applications. This suggests opportunities for vendors both in supporting current operations and in providing resources for future systems development.

In turn, this leads to the fourth problem that, despite the high investment in IT, the shortage of skilled staff to implement changes was yet another real stumbling block to progress.

The following sections provide a profile of some of the most influential leading vendors in the European insurance market.

It is quite clear that the application product vendors who are pushing on a pan-European scale originate either in the U.S. or in Australia, rather than in Europe. These two countries are generally seen by European users interviewed by INPUT as leading the field in advanced insurance systems.

B**Andersen Consulting****1. Overview**

Andersen Consulting is a leading supplier of software and services in Europe. A summary profile of the company is shown as Exhibit IV-4. Andersen's main skills are in providing "front end" management consultancy to clients and then following through with other IS professional services and complex systems integration projects to fully implement new information systems. Andersen's management consultancy capability centres on business integration—the inter-relationship of the following four fundamental strands of a business:

- **Strategy**—devising both business and IT strategies in fast-changing markets
- **Technology**—planning, developing and implementing computer systems and networks with appropriate IS technology
- **Operations**—managing and controlling large computer centres and telecommunications networks
- **People**—managing the resulting changes and their impact on people within the business organisation

EXHIBIT IV-4

Vendor Profile—Andersen Consulting

Heritage	Professional services Large body of IT skill High-quality partners
Focus	Business integration solutions Full-service capability
Strength	Major projects ability Proven methods Business and IT insurance skills
Direction	Systems management Multinationals Organic growth

This relatively unique combination of skills is providing Andersen Consulting with a strong growth record, averaging some 40% per year for the last five years in Europe.

The activity in the Insurance sector generated fees of \$45 million for 1990/1991. Andersen positions itself as providing "business and technology services for the insurance industry." A geographical analysis of Andersen's insurance market revenues is shown in Exhibit IV-5, and a delivery mode analysis is shown in Exhibit IV-6.

Andersen Consulting has maintained this growth almost exclusively through organic growth, with a firm policy of graduate recruitment and staff development. However, the company still needs to recruit first-class experienced consultants for each market sector, and there are signs that this could become increasingly difficult. As the firm takes a larger and larger market share in its chosen sectors, it is seeking an ever higher proportion of the available skill pool.

EXHIBIT IV-5

Insurance Market Analysis by Country Andersen Consulting, 1990/1991

Country	\$M	Percent
United Kingdom	18	41
Spain	6	13
France	4	9
Italy	4	9
Switzerland	3	6
Belgium	2	4
Ireland	1	3
Sweden	1	2
Rest of Europe	6	13
Total Insurance Sector	45	100

EXHIBIT IV-6

Insurance Market Analysis by Delivery Mode Andersen Consulting

Delivery Mode	\$M	Percent
Management Consulting	7	16
Professional Services	15	33
Software Products	1	2
Systems Integration	22	49
Total Insurance Sector	45	100

Around 80% of Andersen Consulting's insurance sector business comes from life insurance companies. The remaining 20% is split fairly equally between general insurance companies and the London market.

Andersen Consulting has a continuing research programme of Delphic studies, technology user surveys and executive focus groups, giving it a deep and unique insight into the dynamics affecting the insurance industry. This research, which has been published in the U.K. as "Insurance in a Changing Europe 1990-95" by Economist Publications Ltd, concludes that the issues facing the insurance industry in the 1990s are:

- Strategy—identifying and exploiting opportunities created by change
- Productivity—promoting the efficient and effective use of people and operations
- Technology—implementing flexible, cost-effective systems that support and drive business strategies

The firm has no software products specifically for the insurance sector, but has had success selling its CASE tools—Foundation, Method/1 and Design/1. It has become a market leader in client/server systems design.

Among the full range of services offered in this sector, such as strategic studies and IS planning, probably the most key and welcome offering in the rapidly changing insurance market is consultancy in "process re-engineering." Life companies especially are having to react to change in their distribution channels and to the arrival of foreign competitors as the markets open up in response to new European legislation for "1992."

Andersen Consulting's insurance sector business is not tied to any particular hardware or software platform, having implemented systems on all the leading vendors' equipment. No particular trend towards open systems has been noticed. Network-based services seem to be taking a long time to become established in the industry's working practices, except where they are within a single large client organisation.

2.. Case Study—Salesmen's Laptop

Andersen Consulting helped design and implement a highly successful system using laptop PCs for one assurance company's direct sales force. The rule-based product recommendation feature, which is virtually an "expert system," scans client's details to ensure that selling criteria are met. An animated company sales pitch not only acts as an impressive introductory aid, but also captures information to support the rest of the sales call process.

Once calls are completed, the salesman can load client details and sales information directly into the branch office sales management system. Any salesman who fails to report into the branch within a specified period suffers a software "time-lock"—he cannot access the sales system. This mechanism ensures that a tight control is maintained on client information—and the salesmen report back to base regularly.

A healthy return on investment has been realised. Within two months of going live, salesmen were consistently exceeding target premiums. Since then, the average premium per salesman has remained consistently higher than the industry average. Crucially, the assurance company's clients have welcomed the tailored alternatives provided to them via this system.

C

The Continuum Company**1. Overview**

The Continuum Company Inc. (Continuum), was originally incorporated in 1968; a summary profile is shown as Exhibit IV-7. The company's stock is traded on the American Stock Exchange under the symbol CNU. Continuum develops and supplies highly complex applications software products and professional services to the insurance industry. The company's products are designed for use on IBM and IBM-compatible mainframe computers and workstations, and are used primarily by life and property and casualty insurance companies to administer and market insurance and investment products.

EXHIBIT IV-7

Vendor Profile—Continuum

Heritage	U.S. 1968 Computations (Australia) added 1990
Focus	Insurance only, IBM U.S., Australia and Europe
Strength	Services (94% of revenues) High R&D (35%+)
Direction	IAA, SAA Financial services integrated solutions, global delivery

In October 1990, Computations Holdings Limited was acquired, a company incorporated in the state of New South Wales, Australia. Computations is an international consulting and computer services company based in Sydney, Australia, that provides computer software and services to insurance and other companies in the financial services industry. This acquisition extended Continuum's market from life and health insurance companies into property and casualty companies. Computations had an established market in both Australia and Northern Europe.

Continuum has its European headquarters outside London in the United Kingdom and has other offices in Paris, France; Frankfurt, Germany; Copenhagen, Denmark; and Oslo, Norway. Two hundred and sixteen staff were employed in Europe as of the end of March 1991.

European revenues for fiscal 1991 reached \$23 million, up 125% on the previous year. The acquisition of Computations contributed about \$9 million to European service revenues, or some 90% of the revenue growth. Net income from Europe fell from \$126,000 in 1990 to a loss of \$1 million, attributed by the company mainly to start-up investments.

Marketing efforts are directed primarily at large and medium-sized life insurance and property and casualty insurance companies in North America, the United Kingdom, Western Europe, Japan and Australia.

The company's efforts in Europe are primarily directed at the United Kingdom, where it has an established base of business. It has increased staff and investment to expand the business in France, Germany, Benelux and Scandinavia. It expects both the life and the property and casualty insurance industries in Europe to experience increased competition across national borders, a faster pace of product innovations, and changing regulatory environments, all leading to increased data management needs.

Continuum's services business is built around its proprietary applications software systems, and consists primarily of assisting insurance companies with the customisation, use and maintenance of the company's software systems. The work force is principally skilled professionals with extensive specialized knowledge of software development, data processing and insurance operations.

2. Key Products

Service revenues represented about 94% of total revenues during 1991. The other 6% relates to licence fee income for software products, including:

- **CLIENT/CONTRACT ADMINISTRATION SYSTEM (CCA)** is a large complex administrative and marketing system for life insurance companies. 111 clients had licensed the system as of March 1991. It is divided into four principal modules. Only three customers have all four modules in production use.

- **CLIENT MANAGEMENT System.** This consists of a client data base and a billing and collection component. In contrast to older systems, CLIENT MANAGEMENT arranges information by client rather than by policy, thereby permitting the monitoring of products sold to clients and facilitating access to important demographic information for marketing, product design and other purposes.
- **PRODUCT MANAGEMENT System** is used for actuarial calculations and forecasts used in the design and administration of insurance and investment products.
- **CONTRACT MANAGEMENT System** performs the major administrative tasks for life insurance companies, including new business processing, regulatory reporting, and contract administration for a broad range of traditional and nontraditional insurance products.
- **DISTRIBUTION MANAGEMENT System** handles the major distribution functions, including payment of commissions, new business production reporting, measurement of sales performance, and regulatory compliance.

Continuum has established an ongoing Advanced Development Program (ADP) for architectural enhancements to this product line. ADP is funded over a five-year period by agreement with three customers: Principal Financial Group, Sun Alliance Insurance Group and Norwich Union Life Insurance Society. Projects worth \$23 million have been approved so far. Results are expected to include initiatives using IBM's DB2 database technology, image processing and pensions administration software products.

In April 1991, Continuum announced a new marketing and technical strategy called Enterprise Solutions by Continuum™, or ES/C™. The ES/C strategy is to develop standardised interfaces to the various modules of CCA and to the company's other products, to permit smooth integration with each other and with in-house or third-party systems.

COGEN is an administrative and marketing software system for property and casualty insurance companies. It is a relational database system developed by Computations that provides extensive functions, from automated policy generation to claims payment.

Major functions include client handling, underwriting, claims management, reinsurance, payables and receivables management, regulatory reporting and productivity tools. As of March 1991, five European customers had completed installation of all or part of COGEN.

CLOAS is another software system for the life insurance industry, established in Australia and Europe by Computations in the late 1970s.

COLOSSUS is an artificial intelligence system that assists claims adjusters with evaluation and settlement of bodily injury claims. It is designed to run on IBM mainframes and PCs and was developed by Computations in collaboration with a major Australian insurance company.

3. Key Services

Consulting and installation. The conversion by an insurance company from one software system to another may require several months or even years to complete. Services offered include designing a comprehensive conversion plan, supplying actuarial, data processing and user-oriented computer professionals, providing educational programmes and supervising the actual implementation of the conversion.

Custom modifications. Although the products are very function rich, each customer tends to have some unique requirements. Analysts and programmers are available to assist customers with these requirements.

Maintenance. Support service agreements are usually signed with the licence for the software products. As of March 1991, the company provided maintenance services to 36 CCA clients, 18 COGEN clients, 88 LIFE/ clients (U.S. only), and 15 CLOAS clients.

Shared-cost enhancements. The company has an established practice of gaining development funding from groups of like-minded clients. Participants may receive royalties on final licence revenues. All statements of licence revenue are made net of royalties in Continuum's reports.

4. Financial Information

The acquisition of Computations has added approximately \$24 million to overall revenues, around \$4 million for licence revenue and \$20 million for services.

Typical licence fees for CCA or COGEN may exceed \$1 million. But service revenues (94%) far outweigh licence revenues (6%).

Continuum has operated in Europe, primarily in the U.K., since 1982. The European operation reportedly lost \$1 million in the year ended 31 March 1991, due to the heavy investment required to establish business from its new Paris and Frankfurt offices.

The company reported business during 1990 from the United Kingdom, Ireland, France, Germany, the Netherlands, Portugal, Norway, Denmark, Sweden and Finland.

All revenues come from operations in the insurance industry, though the company says it has plans to diversify into other financial services markets.

The company's top customers include: Lincoln National Life Insurance Company, Sun Life Assurance Society, Equitable Life Assurance Society of the United States, Sun Alliance Insurance Group, Norwich Union Life Assurance Society, and Principal Financial Group.

5. Delivery Modes

As of June 1991, the mix of business across Europe was as shown in Exhibit IV-8.

EXHIBIT IV-8

The Continuum Company European Operations by Delivery Mode

Delivery Mode	\$M	Percent
Professional Services	18.5	80
Software Products	4.5	20
Europe Total	23	100

D**Policy Management Systems Corporation (PMSC)**

PMSC was originally founded in 1974. It went public in 1981, and in 1989 IBM acquired a 19.8% minority equity interest for \$116.8 million. A summary profile is shown as Exhibit IV-9.

EXHIBIT IV-9

**Vendor Profile—
Policy Management Systems Corporation (PMSC)**

Heritage	U.S. 1974, industry leader Over 80 products and services IBM 20% stake
Focus	Integrated insurance systems Property and casualty (91%)
Strength	Co-development of IAA with IBM in Brussels Over 5,300 clients—mainly U.S.
Direction	IBM mainframe and midrange Global insurance leadership

More recently it has emerged that PMSC is working in partnership with IBM in Brussels on the specification and development of IBM's insurance applications architecture (IAA) project. This should position it well to grow its European business, which is currently a relatively small proportion of its business, at less than 10%.

PMSC—already a dominant force in the insurance software and services industry before it recently acquired another leading vendor, Advanced Systems Applications—provides a full range of integrated software systems and services to all sections of the insurance community. The property and casualty (non-life) sectors generate the large majority of PMSC's business.

The company's administrative, policy processing and financial systems are all delivered as software and remote processing services under IBM's SAA (Systems Application Architecture) framework.

PMSC has a very large portfolio of products and services, over 80 offerings in total, half of them software products. In particular, its Series IIITM products focus on the needs of the large insurer:

- BCMS—Billing and Collection Management System
- CIS—Client Information System
- IMIS—Insurance Management Information System
- ExClaim—Health claims adjudication system

In terms of implementing leading new information systems technologies, PMSC may suffer from the classic "battleship turning" problem of difficulty introducing significant technology changes to a very large customer base. In the case of image processing, however, PMSC has shown it can overcome these problems, demonstrating a new imaging system in conjunction with its partner IBM.

Almost one-quarter of PMSC's revenues can be attributed to the sale of software products and the associated support to large insurers and agencies or brokers, with the balance split evenly between processing services for smaller firms (and for specialty lines of insurance) and network services sold to firms of all sizes.

The U.S. market predominates, with less than 10% of PMSC revenues being generated elsewhere.

E

PAXUS

1. Overview

PAXUS is the leading software and services vendor publicly quoted on the Australian Stock Exchange. Founded in 1970, it has built up a broadly based business in Australia and Western Europe, and is also expanding its operations in both Canada and the Far East. A summary profile is shown as Exhibit IV-10.

EXHIBIT IV-10

Vendor Profile—PAXUS

Heritage	Leading quoted Australian IS vendor, founded 1970 IBM 15% stake
Focus	Insurance, banking, accountancy and health care Australasia, Europe, Canada
Strength	Product portfolio Diversity of products, countries and industry sectors
Direction	Non-U.S. market leadership Acquisitive and organic growth

Worldwide revenues for 1990/1991 were \$200 million (A\$240 million). European revenues in the insurance sector were about \$40 million in 1990/1991; nearly half of this was generated by professional services such as consultancy and custom software development.

Recent acquisitions include IDAPS Australia in 1988, and Capsco Pallm Systems and Insurance Software and Systems Ltd A/S of Norway in 1990. Capsco and ISS were subsidiaries of insurer Swiss Reinsurance. Capsco specialises primarily in integrated insurance systems for the life and health sectors. ISS specialises in the reinsurance sector.

PAXUS is structured into three market-focussed operating groups:

- Insurance addresses the insurance, banking and financial services market. PAXUS holds the pre-eminent position in the supply of specialist software products to the insurance industry outside of North America.
- Accounting addresses the professional accountants sector.
- Services addresses the corporate, government and health care sectors, offering processing and network services.

Approximately 450 of PAXUS' 2,000 staff are employed in the European operations, resulting in revenues approaching \$50 million in 1991.

2. Insurance Products and Services

PAXUS' major products are all real-time, on-line administration systems:

- POLISY is a real-time, on-line system designed specifically for the fire and general insurance industry. POLISY integrates all lines of business and functions necessary to support major insurance companies. In particular, POLISY incorporates policy administration, claims processing, accounts receivable, general-ledger and financial and statistical reporting. One of the key features of POLISY is the relative ease with which customisation of the system can be carried out to suit the individual requirements of different clients.
- LIFE is a real-time, on-line administration system for individual life insurance contracts and personal pensions. LIFE caters for traditional products such as whole of life, endowment and term insurance, as well as the newer investment, unit-linked contracts. The LIFE system, which includes a client umbrella, provides the client administration and accounting functions that companies need to manage their most valuable marketing asset—data about existing clients.
- CAPSIL is a life system from Capsco, which means that PAXUS can now offer three choices of life system under IBM's MVS, one each running on VSAM, DB2 and the Supra database.
- C-ANNUITY is another MVS system handling the payments for annuities.
- TRUST is dealing, registration and administration systems for unit trust management companies. As with POLISY and LIFE, TRUST is available for MVS mainframes and AS/400 midrange computers.
- SICS is a reinsurance system from ISS that has been developed for both IBM MVS and UNIX environments. It includes a policy signing and accounting company module as required by the London reinsurance market.

POLISY, LIFE and TRUST have been created within a database environment and are available on mainframes, superminis and PCs. For example, Life/400 is multilingual and provides traditional life assurance contracts, plan processing and multicurrency support. Other facilities include contract administration and accounting, automated documentation, audit and batch control and security features. LIFE and POLISY use Smart software architecture, which facilitates on-line, real-time transaction processing.

PAXUS, an IBM agent, believes that the AS/400 has provided a de facto standard for small business computing, ease of installation, and plenty of third-party software with a plotted growth path from the B30 model onwards. Support for the potential 1,200 European users will come from the data processing centre in the U.K., which houses an IBM 4381, AS/400 equipment and an X.25 packet-switching network for remote diagnostics and communications with the Australian head office.

PAXUS Information Services offers major products including: information processing services, contract computer personnel, software development services, and consultancy.

F

CAP Gemini Sogeti

1. Overview

Europe's leading independent software and services vendor, the CAP Gemini Sogeti group (CGS) has chosen five target sectors to develop across national boundaries. It has established an International Support operation in Paris with the objective of exploiting CGS strengths across its different country businesses. A summary profile is shown as Exhibit IV-11.

EXHIBIT IV-11

Vendor Profile—CAP Gemini Sogeti

Heritage	European independent leader Professional IS services
Focus	Acquisition of strong players Extended into management consultancy Insurance sector
Strength	Acquisition management Highly distributed business Europe-wide cover, major systems
Direction	International insurance sector "Responsibility" contracts

The insurance sector is one it has identified as strategic, offering good growth potential, building on CGS' existing capabilities and client base across Europe and elsewhere.

CGS's insurance sector activities in Europe currently represent some 5% to 6% of revenues. The company has substantial insurance sector business in most north European countries, especially in France and the U.K.. Its mission is to increase penetration in those countries in which it still does not have a large share, growing rapidly over the next few years until insurance represents perhaps 8% of overall software and service revenues.

CGS provides integrated information system solutions to business problems, and does not generally favour particular software application products. It prefers to offer clients the most appropriate integrated solution to their particular need, keeping the freedom to pick the best available products to integrate.

2. Management Consulting

CGS's parent company Sogeti has been very active in the past two years acquiring management consultancy companies. The group is called Gemini Consulting and includes the MAC Group, United Research and Gamma International, specialising in strategy, change management and IT, respectively.

INPUT's research in this area suggests that management consultants are highly influential in their clients' choice of IS solutions. In addition, the large consultancies have been building their own ability to deliver IS solutions. In the process, they have been winning market share from the established software and services vendors in Europe and generally growing at well above the rate of the overall software market.

CGS is expecting synergy to grow between its acquired management consultancies and its software companies, with local co-operation occurring as the need arises. The CAP Gemini International Support group is expected to provide further impetus to this direction by adding international marketing and distribution of the company's capabilities in its chosen markets.

The insurance sector suffers more than most from the millstone of software maintenance. Huge mainframe applications have grown up over the years, on which the insurance company is typically highly dependent. Changes in the industry—particularly the concern to address the profile of each customer rather than accounting for policy numbers—are generating an urgent demand for new, more flexible applications. But few clients can release their knowledgeable staff to work on these projects. They are all consumed with maintenance of existing systems.

Hoskyns (a subsidiary of CGS in the U.K.) and Prudential are working together on an innovative approach to reducing the software maintenance work load and freeing staff to work on new applications. CGS is also working closely with several major insurance clients to define an IS architecture suitable for each business in the 1990s. This initiative complements some of IBM's IAA (Insurance Application Architecture) work.

CGS refers to much of its recent large projects business as "responsibility contracts." INPUT uses the term systems management, which encompasses both systems integration and systems operations. CGS has been winning a high proportion of the large contracts it has bid for recently. This can be put down not so much just to its size and ability to fund technically complex risks as a prime contractor, but rather to its excellent track record, especially when managing fixed-price contracts.

G IBM

As with most general markets, IBM is the leading supplier of software and services to the insurance sector. However, this sector is seen as particularly strategic by IBM as it has an unusually high appetite for computing, especially of the mainframe variety. The trends to equipment downsizing and to open systems are not nearly as visible in the insurance sector as in most others. A summary profile is shown as Exhibit IV-12.

EXHIBIT IV-12

Vendor Profile—IBM

Heritage	Largest vendor worldwide Seeking software and service margins Overmanned and undermanned
Focus	Repeatable customer solutions Systems integration Vendor partnerships
Strength	Dominant insurance client base Visible high investment in insurance Product distribution channels
Direction	European focus for global insurance Minority shares in key partners Prime contracts with "enterprise" customers

In new technology terms, this sector is also likely to adopt the latest image-based systems early, so as to tackle the ever-increasing flow of insurance paper. Again, this an area in which IBM is investing to ensure market leadership.

With nearly all the large insurers qualifying as "enterprise" accounts, IBM has a unique understanding of the problems they face in exploiting IS to the full. IBM sees a clear demand emerging among its customers for mixing and matching applications from different sources.

Andersen Consulting's research has also shown that a top priority for insurers is to establish an IS architecture that will support their future business and an architecture that can provide a very flexible framework within which to implement complex applications and maintain databases. IBM is actively putting together such an architecture with which to enhance its market position and through which both its clients and its vendor partners can deliver value-for-money solutions.

Investing through equity stakes in key partners is one strand in IBM's method of coordinating a response to the demands of the insurance sector. IBM also chose to base the development of IAA in Brussels in order to ensure that it would address the needs of a truly global insurance market. The upheavals taking place in Europe resulting from takeovers and regulation changes mirror the problems faced by any insurer operating at a global level.

The difficult task facing many insurers is how to update their applications and migrate smoothly away from the software they have depended upon for so long. Migration is the key to future success and needs to be carefully defined case by case, according to IBM.

The new world promised by IBM with IAA has many attractions, as it aims to create an environment in which both tasks—migration and integration—become easier to manage:

- IBM is investing in its own systems integration ability to help customers manage the transition.
- The application architecture is largely platform independent.
- Large applications can be fragmented to a more manageable size.

IBM is not investing directly to produce insurance application products itself, but is investing in providing its clients with:

- A manageable system development path within an architectural framework
- The supporting professional services with which to map the path out and, if necessary, manage its implementation with a systems integration contract
- A choice of national and international applications from which to mix and match unique solutions

H**Sherwood Computer Services****1. Overview**

During the 1970s Sherwood became closely associated with the Lloyds and London insurance markets. It specialised in the provision of package-based, bureau-supported systems. A summary profile is shown as Exhibit IV-13.

EXHIBIT IV-13

Vendor Profile—Sherwood Computer Services

Heritage	Leaders in Lloyds and London insurance markets ICL and Prime platforms Difficulties in diversifying
Focus	Insurance and local government Open systems platforms
Strength	Processing services Quality methods and 4GLs
Direction	European expansion Electronic trading

In 1985, Sherwood obtained a quote on the Unlisted Securities Market (USM) in London and began to spread its interests into other sectors—first financial services (in particular, life assurance), and secondly, an early entry into the fast-growing computer standby sector.

Major shareholders as of April 1990 were:

20%	Framlington Investment Management Limited
14%	B&C Ventures Limited
10%	Investors in Industry Plc
5%	Royal Bank of Scotland

The current Sherwood product and service portfolio was completed in 1987, when networking and local government operations were acquired.

In July 1989, the company divested itself of loss-making subsidiary Mitronix, withdrawing from the high street broking market. Cumulative losses of over £1.4 million were recorded. In 1990, the loss-making Disaster Recovery service, with a turnover of £2.7 million, was sold off to ICL.

The company is organised into two divisions: one addresses three vertical markets—London insurance, financial services and public services (local government); the other is responsible for the cross-industry activities of computer management—network services and software services.

Major clients of Sherwood include Oxford Agency Holdings Ltd., Wren Underwriting Agencies, Rock Asset Management Ltd., Touche Remnant Unit Trust Management Ltd., Derby County Council, Sandwell Metropolitan Borough Council, Securicor Ltd., Lancaster City Council and ICL Ltd.

2. Products and Services

In the late 1980s, the company recognised the limitations of third-generation software languages for development and moved forward into the open systems arena, quickly developing a pool of 4GL expertise.

The provision of products based on open systems, together with the additional services of facilities management and networking, combine with regular support services to make Sherwood a well-integrated computer services provider. Development expenditure was £2.3 million in 1989.

By 1993, all of Sherwood's products will be UNIX based.

Over 250 syndicates in the Lloyds and London insurance market currently use Sherwood products and services.

SCEPTRE is a modular underwriting administration system that is fully compatible with the London Insurance Market Network (LIMNET) and provides the underwriter with all that is necessary for statistical and financial control.

SHARES is one of the most comprehensive business systems for Managing and Members Agents at Lloyds, covering every function from cash flow management to record keeping, and from tax returns to word processing.

SENATOR is a modular administration system for the London market insurance and reinsurance companies that allows for the scientific management of risk portfolios and gives complete financial control.

Key competitors in the insurance market are EPG and Datasure.

GALLERY is a range of administration systems aimed at life insurance companies and includes systems for pensions (ENVOY and PRINCIPAL), personal equity plans (CHANCELLOR) and multi-product new business (DIRECTOR).

GALLERY has been responsible for Sherwood establishing business in both mainland Europe and in Australia.

3. Computer Management

The BRIDGEHEAD portfolio is a broad range of consulting services covering strategy, planning, performance, security and system support.

The PARTNERSHIP portfolio incorporates facilities management, bureau services and timesharing.

The CONNECTIONS portfolio reflects the depth of expertise in networking and communications. VISTA is a unique product for transferring information between PCs using network-independent software.

a. Software Development

Sherwood has over 100 development staff with established centres of excellence, particularly in INGRES, SYNON 2, UNIFY and ACCELL 2000 program development. SSADM and LSDM have been adopted as control, management and quality methodologies. Quality standard certification BS 5750 is being pursued.

4. Market Analysis

Sherwood suffered zero revenue growth for four years as a result of a number of business difficulties, but has now returned to profit. The potential of financial threats to Lloyds insurance business caused the company to diversify with an acquisition strategy in the mid-1980s. These new ventures have not been trouble free, and the London insurance market has also experienced financial cuts and greater competition. Exhibits IV-14 and IV-15 show analyses of Sherwood's revenues by delivery mode and industry sectors, respectively.

EXHIBIT IV-14

1991 Market Analysis by Delivery Mode (£ Millions) Sherwood

Delivery Mode	Revenue	Percent
Processing Services	2.5	11
Turnkey Systems	2.5	11
Applications Software	0.5	2
Systems Software	5.0	22
Professional Services	9.3	41
Network Services	0.3	1
Systems Operations	2.5	11
Total Revenues	22.6	100

EXHIBIT IV-15

1991 Market Analysis by Sector (£ Millions) Sherwood

Industry Sector	Revenue	Percent
Insurance	17.0	75
Local Government and Others	5.6	25
Total Revenues	22.6	100

Geographically, well over 90% of Sherwood business derives from the U.K. However, footholds have been recently established in Spain and Australia, and there are plans to build business in Ireland, Germany, and the Netherlands.

I**Misys Dataller**

Founded in 1979, Misys Dataller is the leading U.K. supplier of computer systems for the insurance and financial intermediary. The company provides a comprehensive range of financial services and software packages based on the company's own microcomputer hardware. The company's systems are now the major force in the market; users range from small high street brokers to national specialist brokers. As the innovator in the market, Misys Dataller's U.K. growth was increased by the company's preparedness for the changes brought by the Financial Services Act.

Product portfolio: Misys Dataller systems incorporate the company's own hardware, which is designed for standalone and multiuser environments. This unique feature of the company's product package ensures that Misys Dataller maintains complete control over the future development of the hardware and is able to react quickly to new technological developments.

Misys Dataller products have been designed for three principal sectors within the financial services market-place:

- The general broker:
 - **BROOMS**—the most widely used administration system for the intermediary that handles personal and commercial lines. The system addresses accounts, files, management reports, diaries and word processing.
 - **SCHEME**—designed to meet the needs of the intermediary that handles delegated-authority business
 - **CARS**—a fast and accurate motor quotation system
 - **HOUSEQUOTE**—a domestic building-and-contents insurance quotation system

- The life and pensions intermediary:
 - LIBRA I—a powerful administration system, particularly in relation to the Financial Services Act, with management reports, word processing, accounts and diary facilities
 - ADVISA—a client counselling system that prioritises financial needs, illustrates recommendations using an extensive database and produces quotes using videotex standards
- The investment adviser:
 - LIBRA IV—an investment manager's system that provides full investment administration and automatic portfolio performance
 - MORTGAGE FINDER—a mortgage guidance system to help the mortgage broker find the best possible lender and match it to a suitable insurer

The company has an active and growing user group, with currently over 1,000 members organised on a regional basis. The user group provides an invaluable source of feedback for future developments, as well as being a forum for educating users on the range of Misys Dataller's services. In addition to extensive training, supplies and customer support services for software and hardware, the company was instrumental in creating Misys Insurance Marketing, an organisation formed from the user group. Misys Insurance Marketing has negotiated over thirty special schemes with leading insurance companies to bring added business benefits to its members. Misys Insurance Marketing is the largest collective purchasing organisation in the industry.

Misys Dataller employs professionals from the insurance and computer industries to maintain the company's position as the leading supplier of systems to the financial and insurance intermediary market-place.

Appendix A

Leading Vendor Rankings

EXHIBIT A-1

Leading Software and Services Vendors Insurance Europe, 1991

Rank	Vendor	Country of Origin	Estimated Sector Revenues (\$ Billions)	Market Share (Percent)
1	IBM	U.S.	345	9.2
2	Reuters	U.K.	150	4.0
3	CAP Gemini Sogeti	France	85	2.3
4	Microsoft	U.S.	80	2.1
5	Computer Associates	U.S.	50	1.3
6	Andersen Consulting	U.S.	45	1.2
7	PAXUS	Australia	45	1.2
8	PMS	U.S.	40	1.1
9	Siemens Nixdorf	Germany	35	0.9
10	Unisys	U.S.	35	0.9
	Total Listed		910	24.2
	Total Market		3,760	100.0

EXHIBIT A-2

**Leading Software and Services Vendors
Insurance
France, 1991**

Rank	Vendor	Country of Origin	Estimated Sector Revenues (FF Millions)	Market Share (Percent)
1	IBM	U.S.	325	8.2
2	CAP Gemini Sogeti	France	170	4.3
3	Axime	France	160	4.1
4	Reuters	U.K.	150	3.8
5	Groupe Concept	France	130	3.3
6	Sligos	France	125	3.2
7	Microsoft	U.S.	100	2.5
8	France Telecom	France	65	1.6
9	EDS-GFI	U.S.	65	1.6
10	Steria	France	60	1.5
	Total Listed		1,350	34.1
	Total Market		3,950	100.0

EXHIBIT A-3

**Leading Software and Services Vendors
Insurance
Germany, 1991**

Rank	Vendor	Country of Origin	Estimated Sector Revenues (DM Millions)	Market Share (Percent)
1	IBM	U.S.	125	9.8
2	Reuters	U.K.	45	3.7
3	Alldata	Germany	40	3.2
4	Siemens Nixdorf	Germany	40	3.0
5	Mummert	Germany	30	2.4
6	Datev	Germany	25	2.0
7	TDS	Germany	25	2.0
8	Microsoft	U.S.	25	1.9
9	Computer Associates	U.S.	20	1.5
10	SAP	Germany	15	1.2
	Total Listed		390	30.7
	Total Market		1,250	100.0

EXHIBIT A-4

**Leading Software and Services Vendors
Insurance
U.K., 1991**

Rank	Vendor	Country of Origin	Estimated Sector Revenues (PS Millions)	Market Share (Percent)
1	IBM	U.S.	28	6.9
2	Reuters	U.K.	24	6.0
3	Sherwood	U.K.	17	4.3
4	AT&T Istel	U.S.	14	3.5
5	PAXUS	Australia	10	2.5
6	Hoskyns (CGS)	U.K. (F)	8	2.0
7	Centre-File	U.K.	7	1.8
8	Andersen Consulting	U.S.	7	1.7
9	Microsoft	U.S.	7	1.7
10	Computer Associates	U.S.	7	1.7
	Total Listed		129	32.1
	Total Market		400	100.0

EXHIBIT A-5

**Leading Software and Services Vendors
Insurance
Italy, 1991**

Rank	Vendor	Country of Origin	Estimated Sector Revenues (Lira Billions)	Market Share (Percent)
1	IBM	U.S.	65	15.5
2	Database Informatica	Italy	40	9.5
3	Olivetti	Italy	15	3.6
4	Reuters	U.K.	15	3.6
5	Microsoft	U.S.	10	2.4
6	Syntax	Italy	10	2.4
7	Engineering	Italy	10	2.4
8	S&M Group	Italy	10	2.4
9	Computer Associates	U.S.	5	1.2
10	Andersen Consulting	U.S.	5	1.2
	Total Listed		185	44.2
	Total Market		420	100.0

Appendix B Forecast Database

EXHIBIT B-1

Software and Services Market Insurance, Europe

Country	Currency	1991	'91-'92 (%)	1992	'92-'97 CAGR (%)	1997	\$ Exch .Rate
France	FFM	3,950	13	4,450	14	8,400	5.18
Germany	DMM	1,250	16	1,450	16	3,050	1.52
U.K.	PSM	380	8	410	11	690	0.52
Italy	ILM	420	12	470	13	880	1.15
Spain	PtaM	18,900	19	22,500	18	52,100	95.00
Switzerland	SFM	232	14	265	14	502	1.35
Benelux	BFM	8,520	11	9,480	14	18,380	31.26
Scandinavia	SKM	1,665	12	1,870	13	3,505	5.54
Rest of Europe	\$M	140	7	150	14	290	1.00
Total Europe	\$M	3,800	12	4,250	14	8,150	1.00

Note: Only products and services specific to the European insurance industry sector are included in these forecasts. Cross-industry delivery modes are not included.

EXHIBIT B-2

Software and Services Market Insurance, Europe

Subsector	U.S. Dollar Millions				
	1991	'91-'92 (%)	1992	'92-'97 CAGR (%)	1997
Life	1,640	16	1,910	16	3,960
Non-Life	1,410	15	1,550	14	2,990
Reinsurance	740	4	770	9	1,200
Total Europe	3,800	12	4,250	14	8,150

EXHIBIT B-3

Software and Services Market Insurance, Europe

Industry-Specific Delivery Modes	U.S. Dollar Millions								
	1991	1991 -1992 (%)	1992	1993	1994	1995	1996	1997	1991- 1992 CAGR (%)
Transaction Processing	540	6	570	610	655	700	750	810	7
Turnkey Systems	800	11	890	1,005	1,135	1,285	1,450	1,640	13
Applications Software Products	460	17	540	630	735	860	1,005	1,180	17
- Mainframe	100	6	105	115	130	145	160	180	11
- Minicomputer	100	13	115	125	140	155	170	185	10
- Workstation/PC	260	23	320	390	465	560	675	815	21
Professional Services	1,580	11	1,760	1,990	2,250	2,540	2,870	3,310	13
Network Services	200	20	240	290	350	425	515	630	21
Systems Operations	65	15	75	90	105	125	150	170	18
Systems Integration	130	19	155	190	230	280	340	405	21
Industry Sector Total	3,800	12	4,250	4,810	5,460	6,220	7,080	8,150	14

EXHIBIT B-4

Software and Services Market Insurance Sector—Life, Europe

Industry-Specific Delivery Modes	US Dollar Millions								
	1991	1991 -1992 (%)	1992	1993	1994	1995	1996	1997	1991- 1992 CAGR (%)
Transaction Processing	300	8	325	355	390	425	465	515	10
Turnkey Systems	320	16	370	430	500	585	675	780	16
Applications Software Products	205	24	255	305	365	435	515	620	19
Professional Services	670	18	790	890	1,010	1,140	1,290	1,530	14
Network Services	60	17	70	90	115	145	180	235	27
Systems Operations	32	16	37	45	52	62	76	83	18
Systems Integration	48	25	60	79	100	127	160	193	26
Industry Sector Total	1,640	16	1,910	2,190	2,530	2,920	3,360	3,960	16

EXHIBIT B-5

Software and Services Market Insurance Sector—Non-Life, Europe

Industry-Specific Delivery Modes	US Dollar Millions								
	1991	1991 -1992 (%)	1992	1993	1994	1995	1996	1997	1991- 1992 CAGR (%)
Transaction Processing	160	2	165	175	185	195	205	215	6
Turnkey Systems	310	9	340	380	425	475	530	595	12
Applications Software Products	155	12	175	205	240	280	330	385	17
Professional Services	620	9	680	780	890	1,010	1,150	1,310	14
Network Services	85	21	105	125	150	180	220	265	21
Systems Operations	23	15	26	31	37	44	52	61	18
Systems Integration	52	20	62	74	89	107	128	154	20
Industry Sector Total	1,410	10	1,550	1,770	2,020	2,290	2,620	2,990	14

EXHIBIT B-6

Software and Services Market Insurance Sector—Reinsurance, Europe

Industry-Specific Delivery Modes	U.S. Dollar Millions								
	1991	1991 -1992 (%)	1992	1993	1994	1995	1996	1997	1991- 1992 CAGR (%)
Transaction Processing	80	0	80	81	83	85	87	88	2
Turnkey Systems	170	5	180	195	210	225	245	265	8
Applications Software Products	100	12	110	120	130	145	160	175	10
Professional Services	290	0	290	320	350	390	430	470	10
Network Services	55	15	65	75	85	100	115	130	15
Systems Operations	10	15	12	14	16	19	22	26	17
Systems Integration	30	10	33	37	41	46	52	58	12
Industry Sector Total	740	4	770	840	910	1,010	1,100	1,210	9

Appendix C

Forecast Reconciliation, 1991-1992

Exhibit C-1 shows the changes made in this year's forecast in comparison to that of the previous year.

The changes made in the market assessments for the insurance sector in 1992 reflect a more pessimistic overall view of actual market growth in 1991 and changes in exchange rate assumptions, the latter accounting for 6% of the difference.

EXHIBIT C-1

Insurance Sector Reconciliation of Market Forecast, Europe

Industry-Specific	1991 Market			1996 Market			'91-'96 CAGR	
	1991 Study	1992 Study	Variance	1991 Study	1992 Study	Variance	1991 Study	1992 Study
Delivery Modes	\$M	\$M	(%)	\$M	\$M	(%)	(%)	(%)
Transaction Processing	520	540	4	820	750	-9	10	7
Turnkey Systems	770	800	4	1,750	1,450	-17	18	13
Applications Software Products	470	460	-2	1,050	1,005	-4	17	17
Professional Services	1,650	1,580	-4	3,700	2,870	-22	18	13
Network Services	220	200	-9	580	515	-11	21	21
Systems Operations	60	65	8	145	150	3	19	18
Systems Integration	130	130	0	380	340	-11	24	21
Industry Sector Total	3,800	3,800	0	8,400	7,080	-16	17	14

