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# CAD/CAM Industry Service

## European Markets

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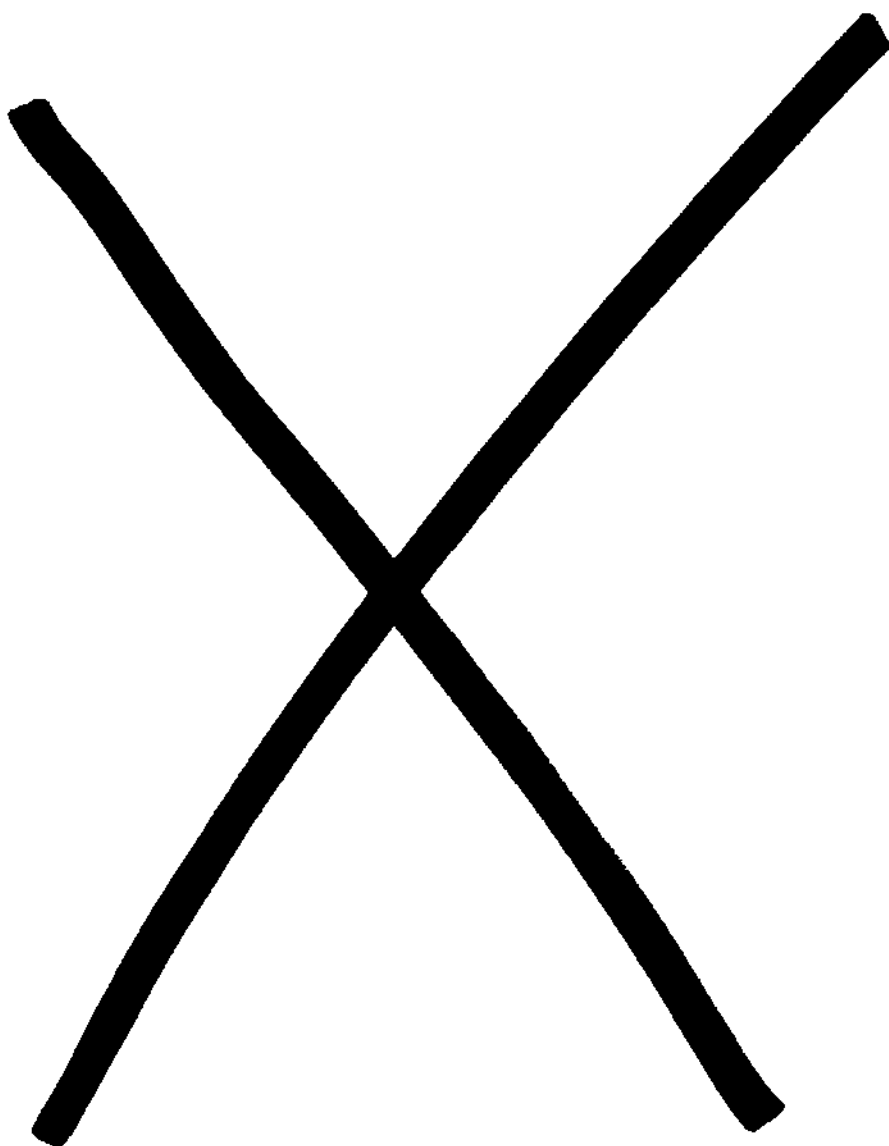
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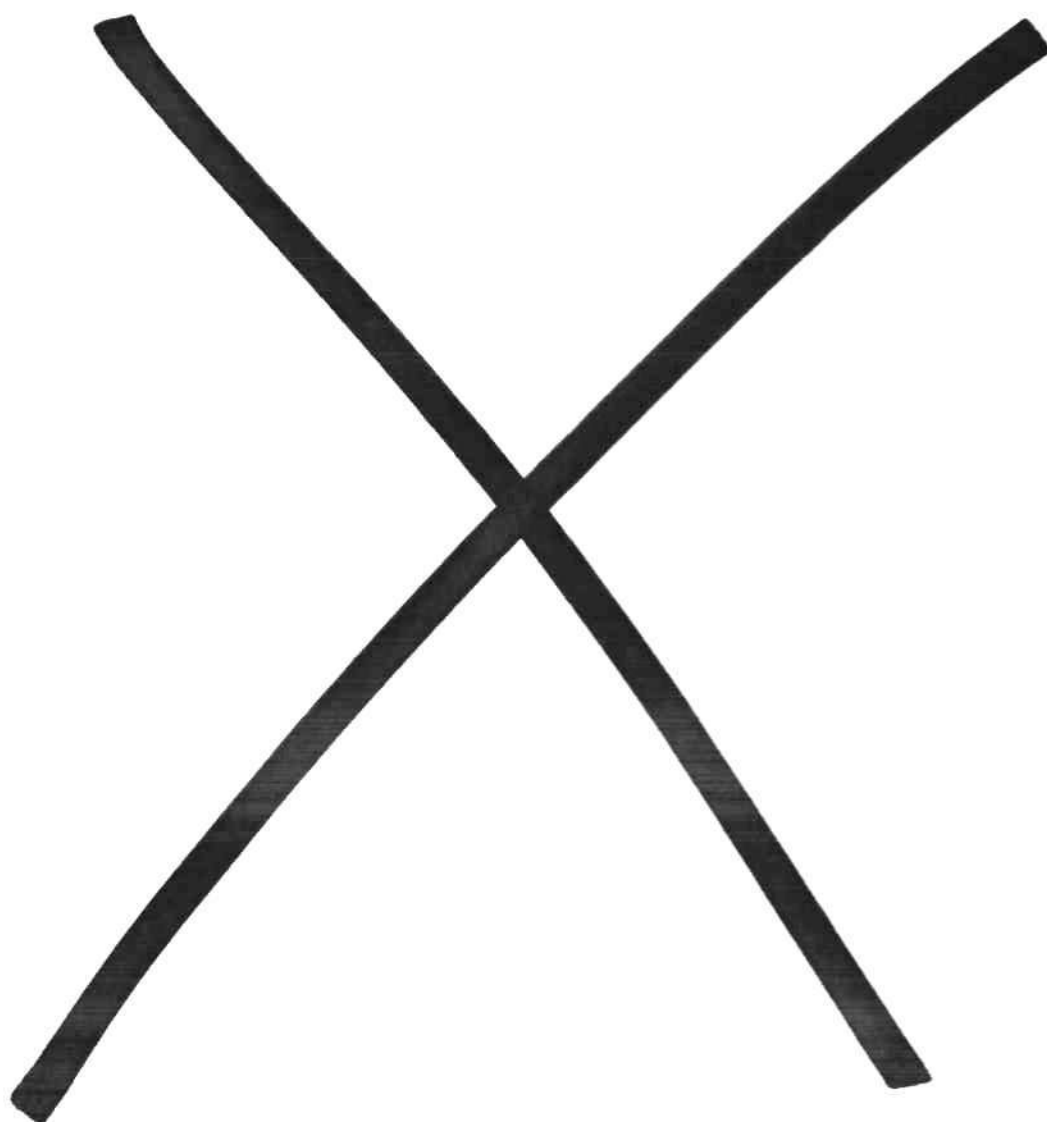
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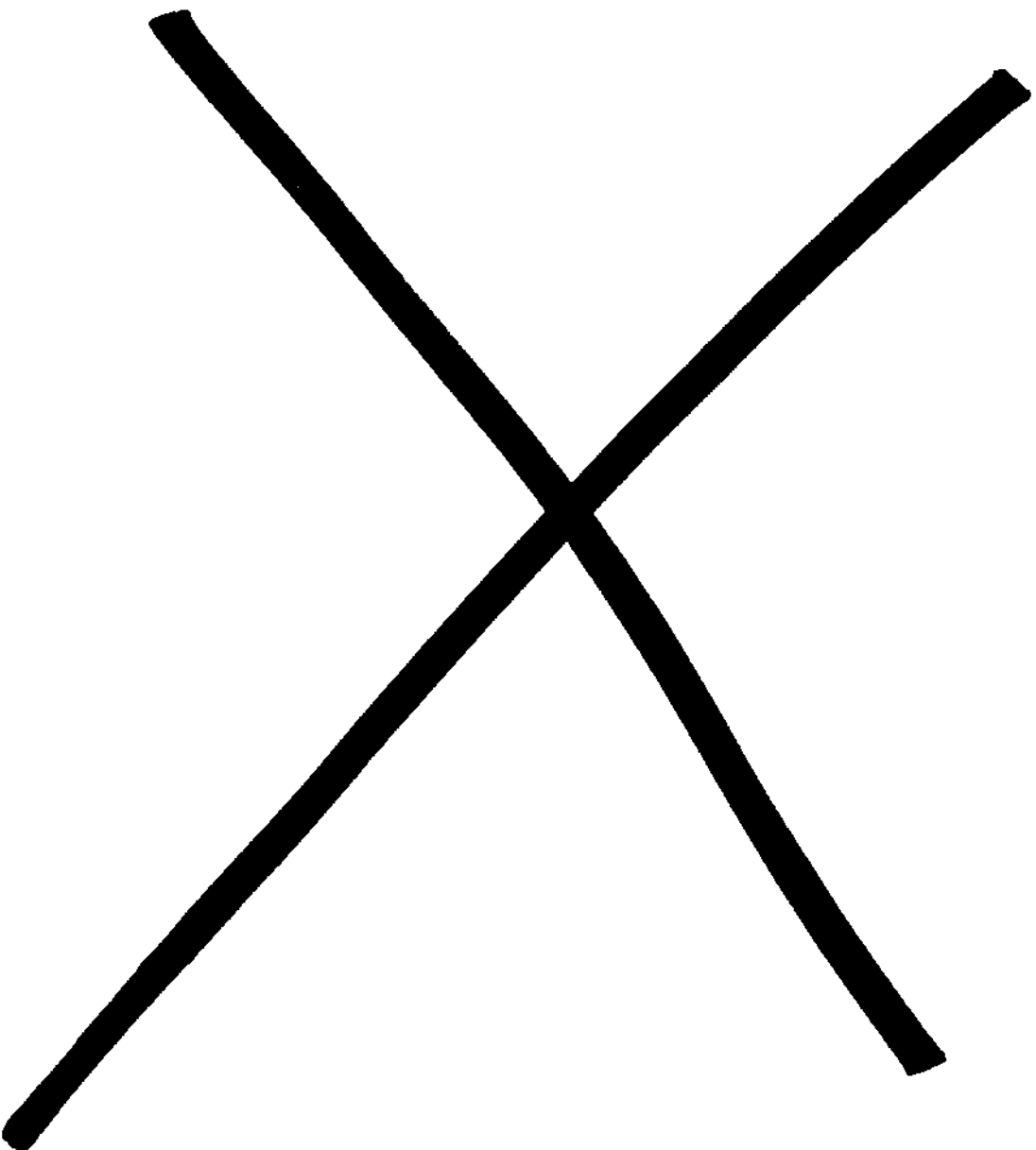
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## 2.1 Geography and Demographics

Benelux



Regional Statistics		CAD/CAM-Related Data	
Total engineers	119,785	1988 Market size	
Electrical/electronic	N/A	Revenue (millions)	\$243
Mechanical	N/A	Workstations shipped	9,483
Chemical/biological	N/A	Installed base	20,493
Metallurgical/materials	N/A	1988 Revenue Mix by Application	
Civil/architectural	N/A		
Others	N/A		
N/A = Not Available		<div> <div>MCAD 64%</div> <div>AEC 14%</div> <div>Mapping 5%</div> <div>EDA 17%</div> </div>	

0003846-1

Source: U.S. Department of Commerce  
The World Bank  
Dataquest  
April 1989

## The Netherlands



## Country Statistics

Total population (millions)	14.56	1988 Exchange rate (F/US\$)	1.96
Area (square kilometers)	40,844		
Population density	356:1	1988 Unemployment rate (%)	11.2
Trade balance (US\$-billions)	1.8	Total engineers	70,000
1988 GDP (1980 US\$-billions)	189.9	Electrical/electronic	N/A
1988 GDP (1980 F-billions)	377.1	Mechanical	N/A
1989 real GDP growth rate (% est.)	3.0	Chemical/biological	N/A
Structure of production (% 1985 GDP)		Metallurgical/materials	N/A
Agriculture	4	Civil/architectural	N/A
Industry	34	Others	N/A
(Manufacturing = N/A)			
Service	62		
		N/A = Not Available	

0003846-2

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

## Belgium

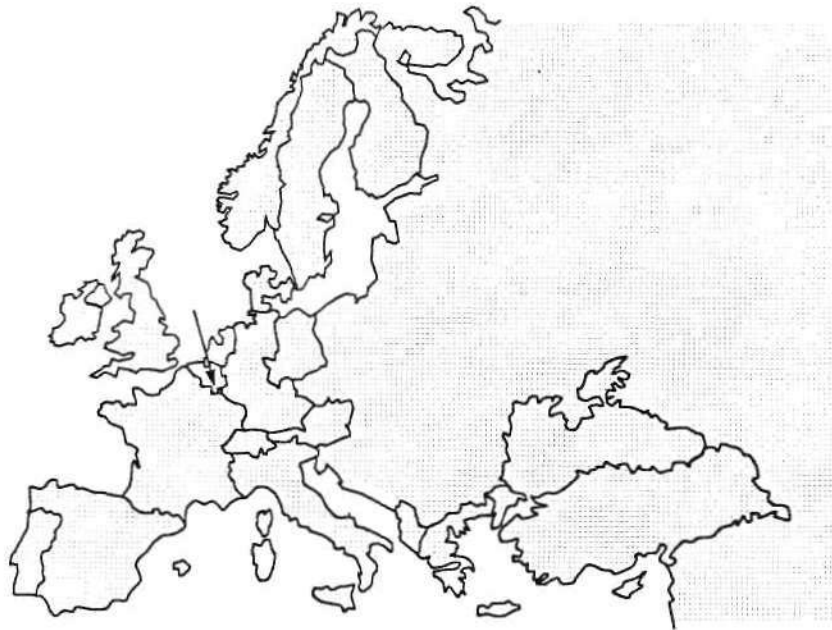


Country Statistics			
Total population (millions)	9.91	Exchange rate (BF/US\$)	37.04
Area (square kilometers)	30,513		
Population density	325:1	1987 unemployment rate (%)	9.6
Trade balance (US\$-billions)	(1.0)	Total engineers	48,000
1988 GDP (1980 US\$-billions)	134.4	Electrical/electronic	N/A
1988 GDP (1980 BF-billions)	3,919.6	Mechanical	N/A
1989 real GDP growth rate (% est.)	2.7	Chemical/biological	N/A
Structure of production (% 1985 GDP)		Metallurgical/materials	N/A
Agriculture	2	Civil/architectural	N/A
Industry	33	Others	N/A
(Manufacturing = 23%)			
Service	64		
		N/A = Not Available	

0003846-3

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

## Luxembourg



Country Statistics			
Total population (millions)	0.366	1988 Exchange rate (BF/US\$)	37.04
Area (square miles)	2,586		
Population density	139:1	1987* Unemployment rate (%)	10.9
Trade balance (US\$-billions)	N/R	Total engineers	1,785
1987* GDP (1980 US\$-billions)	5.3	Electrical/electronic	N/A
1988 GDP (1980 BF-billions)	N/A	Mechanical	N/A
1989 real GDP growth rate (% est.)	N/A	Chemical/biological	N/A
Structure of production (% 1985 GDP)		Metallurgical/materials	N/A
Agriculture	2	Civil/architectural	N/A
Industry	33	Others	N/A
(Manufacturing = 23%)			
Service	64		
*1988 data not available at publication		N/A = Not Available N/R = Not Relevant (Luxembourg trade statistics are conventionally included with Belgian statistics.)	

0003846-4

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

## **2.2 Government, Trade, and Economic Forces**

### **EXECUTIVE OVERVIEW: BENELUX**

The following summary highlights this region's major economic and political developments of 1988, and presents 1989 economic projections. It is based on reports from The WEFA Group (Wharton Econometric Forecasting Associates).

#### **Belgium**

- The year 1988 was one of continuous, investment-led growth in a noninflationary climate. Inflation ran to a moderate 2 percent.
- The Belgian Franc (BF) now appears strongly linked to the deutsche mark, and interest rate fluctuation in Belgium is thus related to West German monetary policy.
- Belgium's revised constitution was accepted and is transferring increased authority to the three regional governmental bodies.
- Forecasts for 1989 indicate a continuation of moderate economic growth, with more rapid growth in employment and industrial production.

#### **The Netherlands**

- Dutch GDP rose 3.1 percent in the first half of 1988 and averaged 2.2 percent for the year as a whole, with net exports and manufacturing leading this growth. Through August 1988, manufacturing climbed at an average of 4 percent and the trade balance reached F 11.4 billion.
- Despite low inflation, interest rates rose in 1988. The Nederlandsche Bank increased three key interest rates in mid-December but was unable to stem the weakening of the gulden versus both the mark and the dollar.
- In order to prepare for increasing intra-EC integration, the Dutch government is faced with the challenge of curtailing government spending.
- The corporate taxation rate was reduced from 42 to 35 percent, and may signal a gradual shift from years of relatively austere government economic policy to more expansionary policies in the future.
- In 1989, government austerity, relatively low personal consumption, and a tight monetary policy will keep Dutch growth below the average European forecast.

## **2.3 Doing Business in the Benelux Countries**

### **BACKGROUND ON THE NETHERLANDS**

#### **General Considerations**

Domestic industry in The Netherlands should be viewed in the light of the Dutch trading tradition. More than 60 percent of the Dutch gross national product (GNP) stems from trade. This compares with 29 percent for West Germany, 20 percent for France, 13 percent for Japan, and 6 percent for the United States.

Historically driven by a strong agricultural base, the Dutch domestic economy is still dominated by the food, drink, and tobacco industries. Taken together, these groups account for 18 percent of the total turnover of Dutch industry. Following this, the chemical and petroleum industries account for another 17 percent. The predominance of the petroleum sector stems from the discovery of one of the world's largest natural gas deposits in The Netherlands in the early 1960s. As a result, natural gas has become one of the key Dutch export commodities. The changing value of natural gas among international energies has recently played a major part in Dutch economic performance.

In order of industrial turnover, the remaining primary industrial activities are:

- Electrical engineering (14 percent)
- Printing (9 percent)
- Mechanical engineering (8 percent)
- Metal products (8 percent)
- Vehicles, shipbuilding, and aerospace (6 percent)

These industries benefit from the very high literacy rates of the Dutch people. Of those who complete higher education, 45 percent study engineering and scientific subjects. According to Dutch government statistics, there are 100,000 scientists and engineers in the nation.

#### **Recent Economic Developments**

With more than 60 percent of The Netherlands' GNP dependent on trade, the Dutch economy acts as a barometer of international trade developments. Since the Dutch gulden (guilder) has appreciated against the dollar and other European currencies, The Netherlands has effectively lost competitiveness in international trade. This situation is perpetuated by slowing economic growth not only in the world but in The Netherlands' main trading partner, West Germany.

### THE NETHERLANDS GOVERNMENT POLICIES

Known for its exceptionally stable political environment, The Netherlands supports a constitutional monarchy, currently headed by Queen Beatrix. However, political power stems from a democratic parliamentary system having a written constitution that protects individual liberties. It is extremely difficult for any single party to get a majority vote in this parliament, because of the large number of political parties in The Netherlands. Thus, the interests represent a broad base of coalitions, a factor that further stabilizes the political atmosphere.

#### Economic Policies

The current economic program is directed by the center-right coalition of Christian Democrats (CDA) and Liberals (VVD). Led by the prime minister, Ruud Lubbers, the government has focused on these three issues:

- Reduction of government borrowing
- Reduction of unemployment
- Stimulation of Dutch economic growth

#### *Reduction of Government Borrowing*

The Dutch government's top economic priority continues to be reduction of the budget deficit. This deficit, which in 1987 was at 6.4 percent of gross domestic product (GDP), continues unabated because debt service costs are growing faster than GDP. The Dutch Finance Ministry exercised greater control over the 1988 budget as a result of various ministries exceeding their 1987 spending ceilings by a total of 4 billion guilders (F4 billion). The main reason for the increase in government borrowing has been the drop in state revenue from natural gas sales. Given the abundance of gas on European markets as well as the price competitiveness of other fossil energy sources (oil and coal), this situation is expected to worsen, which means that further cuts in government spending programs are anticipated if the Dutch deficit is to be reduced.

#### *Reduction of Unemployment*

Following its postwar peak of 14.5 percent of the labor force in 1984, unemployment has fallen steadily, despite the government's employment programs. The necessary sustaining of government austerity programs, spurred by the need to reduce the spending deficit, will mean that this situation is not likely to improve significantly in the short term.



### *Stimulation of Dutch Economic Growth*

The Dutch economy, like the economies of much of the European community, experienced a period of slow growth from the second quarter of 1987. In order to increase net disposable incomes, the 1988 budget called for a F 11.35 billion tax reduction. This included reducing corporate rates between 7 percent and 35 percent. However, it is unclear when the Dutch deficit situation will ease enough to finance these tax cuts.

The tax cuts stand in place of salary increases which are the usual mode of increasing disposable income. This is part and parcel of a Dutch wage control policy to contain labor costs—hence, production costs—and thereby regain a competitive Dutch export position.

### *Monetary Policy*

The primary aim of Dutch monetary policy is to link the guilder's exchange rate to the West German deutsche mark. In order to do this, The Netherlands Central Bank manipulates interest rates and influences money creation by the commercial banks.

### *Trade Policies*

As a member of the European Community (EC), the Dutch follow the regulations of the EC regarding trade treaties, preferences, import regulations, customs duties, and import quotas. The primary rules of the EC in these areas are summarized in the following discussion.

### *Preferential Trade Treaties*

The Netherlands, like all EC members, does not negotiate its own international trade treaties but acts through the EC Commission. Exports from EC countries ship duty free to a large market. Those countries with rights to preferential duties include the following:

- Other EC member countries (Belgium, Denmark, France, Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, and the United Kingdom)
- European Free Trade Association (EFTA) members (Austria, Finland, Iceland, Norway, Sweden, and Switzerland)
- Turkey
- Mediterranean/Middle East (10 countries)

- Africa/Caribbean/Pacific (ACP) (66 countries)
- Approximately 100 developing countries

### *Import Licenses and Controls*

In general, import licenses are not required in The Netherlands. For CAD/CAM equipment (hardware or software), the only restrictions would be those regarding merchandise of unknown origin or merchandise originating from Japan, Hong Kong, the People's Republic of China, or the USSR or other socialist countries. Even where licenses are required, not all products are subject to quota restrictions.

An application for a license must be submitted by the Dutch importer, not the foreign supplier, to the Central Import and Export Office (Central Dienst voor Inen Uitvoer, CDIU) in Groningen.

### *Export Licenses*

Export licenses apply only to strategically important or specially designated goods. For goods stored in a bonded warehouse or passing through in transit, no license whatsoever is needed.

### *Customs Duties*

The member countries of the EC have adopted a shared external tariff for "third-party" countries. To classify all merchandise in a single, unified way across EC countries, the Customs Cooperation Council Nomenclature (CCCN) is used.

No import duty is payable on any movement of goods in free circulation between The Netherlands and its EC partners. This is also true for movement of goods between EC partners and EFTA countries, provided the goods originate from an EFTA country.

The customs value of merchandise is of particular importance, because most import duties are ad valorem. This means that duties are levied on the basis of the transaction value—i.e., the price actually paid or payable.

### *Determination of Origin in International Trade*

From the above rules, it is clear that EC-originated goods have the advantage of requiring zero duty tax. It is therefore of some interest to view the rules for determining origin. Generally speaking, goods are regarded as being of EC origin if:

- They have been wholly produced in one of the member countries of the EC
- They incorporate material not entirely produced in the EC, but such material has been subject to sufficient transformation (Generally, this means that the tariff classification of the exported product differs from that of its parts.)

### *Other Duties and Taxes*

Whether from EC countries or elsewhere, all imports into The Netherlands are subject to a value-added tax (VAT) at 20 percent, the rate imposed on domestic Dutch goods.

### **Intellectual Property Protection**

#### *Patents*

Patents may be transferred or licensed and remain in force for 20 years from the date of application. One may obtain a patent in The Netherlands by several means. Two are discussed here.

First, The Netherlands is a signatory to the Paris Convention for the Protection of Industrial Property. This means that a patent application submitted in most industrialized nations establishes a one-year priority in The Netherlands. Consequently, within one year, a foreign inventor may claim a patent in The Netherlands according to the date of the original filing.

Second, The Netherlands is party to the European Patent Convention (EPC, Munich 1973) and the Patent Cooperation Treaty (PCT, Washington, D.C., 1970). These organizations specify procedures that also provide Dutch patent rights.

#### *Copyrights*

Copyrights give protection for the life of the author, plus 50 years. Like many other EC members, The Netherlands is party to the Bern Convention for the protection of Literary and Artistic Works and to the Universal Copyright Convention. By the conventions, copyright in The Netherlands is granted for works published in other countries that belong to these conventions.

#### *Designs*

Since 1975, the Uniform Benelux Design Law has been in effect in The Netherlands, Belgium, and Luxembourg. The law addresses the appearance of a product "with a utility function" and provides exclusive rights to a design in all three countries for up to three five-year periods.

### **Corporate Taxation**

Corporations are subject to corporate income tax (vennootschapsbelasting) on their worldwide income. Nonresident entities must pay this tax only on Dutch sources of income.

## **THE NETHERLANDS' FOREIGN RELATIONSHIPS**

### **Relationship to the United States**

The Netherlands has been a receptive market for U.S. exports as well as an important investment partner. The United States is the largest source of foreign direct investment in The Netherlands, with 1986 holdings of nearly \$12 billion, and more than 1,000 U.S. companies have offices in The Netherlands.

An unusually happy trading relationship exists between the two countries. The Dutch provide the second largest source of foreign direct investment in the United States. Furthermore, they are the source of a large U.S. bilateral trade surplus (\$3.5 billion in 1986). With the depreciation of the dollar with respect to the Dutch guilder, however, U.S. exports are expected to be more competitive on Dutch markets.

The Netherlands' major imports from the United States in 1986 were:

- Specialized machinery and transportation equipment (\$693 million)
- Chemicals (\$414 million)
- Business and data processing equipment (\$268 million)
- Alcoholic beverages—beer (\$227 million)

Leading exports to the United States were:

- Machinery and transportation equipment (\$965 million)
- Data processing equipment and parts (\$661 million)
- Chemicals (\$554 million)
- Oilseeds (\$361 million)

The depreciation of the dollar in comparison with the Dutch guilder in 1987 had strengthened the position of U.S. exporters into the Dutch market.

## **INVESTMENT CONSIDERATIONS IN THE NETHERLANDS**

The Netherlands benefits from more than three centuries of experience as a major trade center, a position stemming partly from its geographical location and partly from its open trading environment. The open trade policy is reflected in the lack of serious

barriers, tariff or nontariff, to U.S. exports. Notably, the U.S. Department of Commerce reports that few specific complaints regarding trade practices are registered by U.S. companies operating in The Netherlands.

Because of the Dutch government austerity programs, driven by a budget deficit and an unemployment problem, reviews of business opportunities in The Netherlands are mixed. On the one hand, there are reasons to be optimistic. The Dutch have a strong open trading policy, making The Netherlands a good investment location for businesses geared toward international trade—particularly the West German, U.K., and Scandinavian markets. Furthermore, the appreciating gulden (guilder) strengthens the position of foreign competitors in the Dutch market.

On the other hand, the slow growth in domestic inflation and costs places a limit on income growth. Because of these factors, there is a consensus that Dutch consumer demand and government demand will fall below the Organization for Economic Cooperation and Development (OECD) country trend.

### Direct Foreign Investment

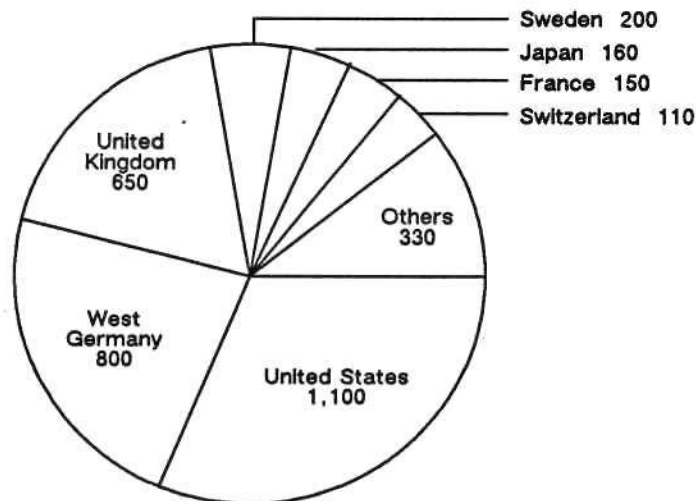
With an economy very dependent on trade, the Dutch actively encourage foreign investment. An estimated 3,500 foreign companies currently have a presence in The Netherlands, with the United States representing the largest share. The United States, West Germany, and the United Kingdom invest heavily in The Netherlands. Figure 2.3-1 shows the approximate number of foreign companies in The Netherlands, broken down by country of origin. Numbers in parentheses indicate the number of companies represented by that country in The Netherlands.

The U.S. Department of Commerce, through the U.S. Embassy in The Hague, has identified a number of key industrial sectors. Those of particular relevance to CAD/CAM vendors are the following:

- Aircraft, avionics, and parts
  - In 1986, the Dutch market for aircraft, avionics, and related parts was estimated at US\$714 million.
  - U.S. exports of these products are expected to grow at an annual rate of 30 percent over the next three years, and a good share of this growth is related to KLM's decision to purchase American aircraft.
- Artificial Intelligence
  - Although 1986 Dutch investments in Artificial Intelligence (AI) amounted to only US\$20 million, a recent study forecasts that the top Dutch companies will invest \$250 million in AI by 1990.

Figure 2.3-1

### Foreign Companies in The Netherlands



0003585-1

Source: The Netherlands Foreign Investment Agency  
Dataquest  
July 1988

- Computers and software
  - The U.S. Department of Commerce estimated that the total Dutch market for computer equipment was US\$1.8 billion in 1986, with an (estimated) average annual growth rate over the next three years of 20 percent.
  - Total imports were US\$3.8 billion in 1986.
  - This discrepancy is due to the fact that The Netherlands serves as a major distribution center and acts purely as a relay station for much of this computer equipment.
  - Dataquest believes, however, that Dutch industry's drive toward automation will promote computer investment; small and medium-size Dutch businesses are of particular interest because it is estimated that they are only 20 percent automated.

### Investment Incentives

As a world financing center, The Netherlands offers foreign manufacturing companies a wide range of financing and investment incentives. These include the following:

- The Netherlands Bank and commercial banks
  - The Netherlands Bank is the country's central bank and the sole bank of currency issue; in addition to other services, The Netherlands Bank may allow a foreign company to borrow in the Dutch market.
  - In general, commercial banks play a lesser role in foreign financing.
    - Most commonly, short-term financing is provided through overdraft facilities.
    - However, medium-term loans may be made to finance extended export contracts or the purchase of machinery and equipment.
- The National Investment Bank
  - The National Investment Bank, usually providing medium-term credits, normally is prepared to take greater risks than the commercial banks and is willing to finance new companies and innovative enterprises.
  - The bank generally makes loans of at least F250,000.
- Venture capital
  - The major sources of venture capital are private and institutional investors, banks, and government institutions.
  - Actively promoted by the government, the MIP Equity Fund (Maatschappij voor Industriële Projecten) was funded in 1972 and is 57 percent government owned.
    - The MIP usually invests in large projects, leaving smaller ventures to the private investors.
    - To date, there are 60 private investment companies—the Dutch equivalent of venture capital funds.
  - A detailed description of investment criteria may be obtained from the Dutch Association of Participation Companies (see the "Regulatory Agencies and Trade Associations" section of this document).

There are also several government grant opportunities. These investment incentives fall into the following categories:

- General investment incentives
  - To encourage investment in fixed assets, this class of tax-free grants is offset against corporate tax assessments.
- Regional incentives
  - This group consists of a system of grants to encourage industrial development in economically weak regions (the northeastern provinces of Groningen, Friesland, Drente, the northern part of Overijssel, and the southern part of Limburg province).
  - Depending on the amount invested, grants consist of 15 percent to 35 percent of the investment in land, buildings, and equipment.
- Special incentive programs
  - These consist of six-month grants, designed to fund research projects investigating new products, processes, systems, and services.

## **OTHER BUSINESS CONSIDERATIONS IN THE NETHERLANDS**

### **Corporate Law**

Under Dutch corporate law, the types of business organizations that may be registered in The Netherlands are the following:

- Private limited companies (Besloten Vennootschap met beperkte aansprakelijkheid or BV)
  - Private companies are the most common form of foreign business; minimum paid-in capital for a BV is presently F40,000.
- Public companies (Naamloze Vennootschap or NV)
  - Public companies are the business entity used to form capital publicly, whether based on the stock exchange or not; minimum capital for the NV is F 100,000.
- Foreign subsidiaries (Bijkantoor or Filiaal)
  - The branch of a foreign company takes on the legal status of the parent company.



## **Exports**

Three principal organizations deal with export information in The Netherlands:

- The Netherlands Foreign Trade Agency (EVD), part of the Ministry of Economic Affairs
- The Dutch Center for Trade Promotion (NCH), a mixed governmental and private organization
- Fenedex, The Federation of Dutch Exporters (Federatie voor de Nederlandse Export)

## **Regulatory Agencies and Trade Associations**

The following are addresses of regulatory agencies and trade associations in The Netherlands:

- Netherlands Foreign Investment Agency  
One Rockefeller Plaza  
New York, New York 10020  
Telephone: 212-246-1434
- Netherlands Foreign Investment Agency, Head Office  
91 Bezuidenhoutseweg (Postbox 20101)  
2500 EC The Hague, The Netherlands  
Telephone: (31) (70) 797233-797125
- Dutch Association of Participation Companies (Nederlandse Vereniging voor Participatiemaatschappijen - NVP)  
Princess Beatrixlaan 5 (Postbox 93093)  
2509 AB The Hague, The Netherlands  
Telephone: (0) 70-471111

## **BACKGROUND ON BELGIUM**

### **General Considerations**

Like that of The Netherlands, the Belgian economy is based on long-held trading traditions. As of 1986, Belgium exported more than 80 percent of the its GNP. In fact, exports to Belgium are frequently reexported, both with and without value added.

The domestic industrial structure of Belgium is quite different from The Netherlands', however, being traditionally dominated by the textile, coal, and steel industries. In the 1970s, the depression of these industries initiated a prolonged period of economic stagnation in which Belgium's GNP grew by only 1 percent.

The country entered the 1980s with three major problems:

- A 4 percent deficit on the current account (as a percent of GNP)
- A 12 percent unemployment rate
- A runup in public debt that grew to a level higher than the GNP itself

The increase in public debt has been a factor in keeping real interest rates high, with the consequent risk of crowding out private investment. The explosion of debt, illustrated by Figure 2.3-2, was due in large part to the self-sustaining nature of the deficits caused by interest payments.

Certainly, the high foreign trade exposure of the Belgian economy made it particularly susceptible to the oil shocks of the 1970s. Nevertheless, OECD economists suggest that it is primarily domestic reasons that sustained the imbalances. First, the structure of production at the time of the first oil shock did not match the demand, the declining sectors accounting for a larger share of activity than in competing countries. Second, trade was largely concentrated with Europe, where growth has been slower than world demand. However, the main cause has been the rise in wage costs, which were excessive in relation to the trend in productivity. The surge of wage costs began as of the early 1970s with an explosion of real wages that was then consolidated by a system of rigid indexation. This situation forced corporate incomes to bear the brunt of adjusting to the terms of trade wrought by the two oil shocks. All in all, real per capita labor costs increased by more than 5 percent per year during the 1970s.

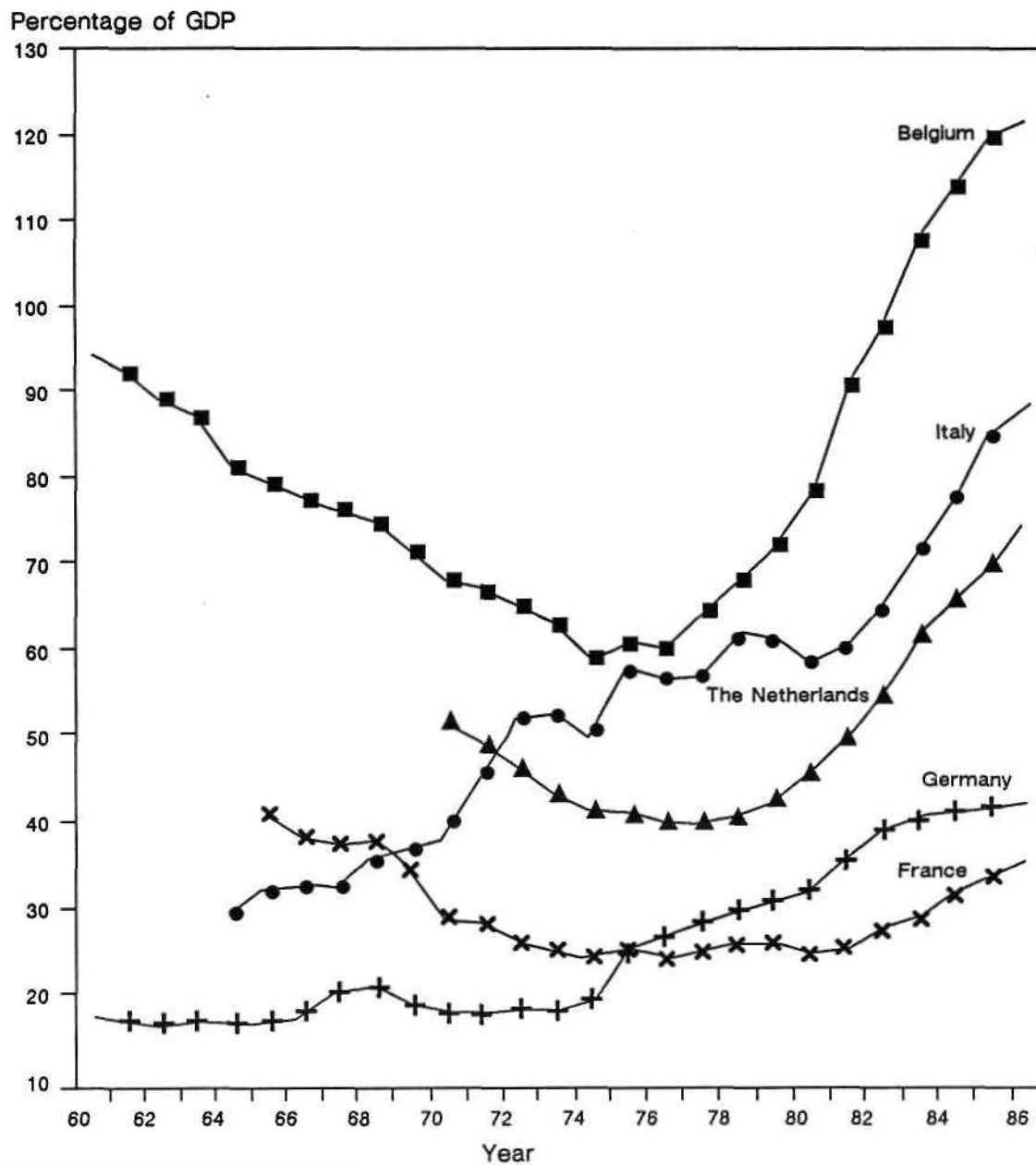
In an economy that is highly exposed to foreign trade and has extensively indexed incomes, Belgian exchange rate policy, prices, and income policy are very closely linked. Because Belgium largely has to align its export prices with those of its main trading partners, enterprises in the exposed sector were unable to pass the increase in their costs through to prices. They were forced therefore to improve their productivity and to shut down loss-generating plants, which contributed to the steep rise in unemployment. Businesses also had to accept a sharp drop in profits; this drop, in turn, led to reduced investment. In summary, the 1970s and early 1980s were characterized by a regenerative loop of negatively reinforcing economic variables.

### *Tax Reform*

The 1989 tax reform is aimed at a substantial reduction in the Belgian personal income tax rates, targeting a 1993 maximum marginal rate of 50 percent, versus the current 72.5 percent, one of the highest in Europe. By 1993, this plan is expected to cost some F89 billion. Because government revenue cannot be tapped, it is anticipated that compensation will be made through new revenue sources, such as imposing a minimum tax on all companies. To date, however, corporate taxation remains virtually untouched by this plan.

Figure 2.3-2

Gross Public Debt in Belgium  
(As a percentage of GDP)



\* General government gross debt

0003585-2

Source: OECD Secretariat estimates  
Dataquest  
July 1988

### *Limited Privatization*

Although public sector ownership is not as widespread in Belgium as in other western European nations, there are many areas where the public sector has a quasi monopoly: gas, steel, coal, electricity, telecommunications, and public transport. Since the coalition partners in the Belgian government could not agree on the size of the privatization plan, a limited plan was put in place. To start, the Brussels Airport Authority, Distrigaz (a gas distributor), and the Caisse Generale d'Epargne et de Retraite (a savings bank) were sold. Estimates of the total sum the Belgian government could harvest through privatization of most of its public-sector enterprises vary between F 60 billion and F 100 billion.

A major event at the beginning of 1988 was the attempted raid on the Societe Generale, a holding company with dominant interests in large parts of Belgian industry, by the Italian investor Benedetti. So far, this attempt seems to have failed, although the situation is still unclear. However, a side effect of this attempt has been a greater awareness and concern about the future competitiveness of Belgian companies, which strive to be more dynamic entrepreneurial organizations.

### **BELGIAN GOVERNMENT POLICIES**

Like The Netherlands, Belgium is nominally ruled by a constitutional monarchy. The effective ruling body is Belgium's house of representatives. Currently, the government is controlled by a coalition of principally Socialists, Christian-Socialists, and Liberals.

Belgium continues to experience political instability. In October 1987, King Baudoin accepted the Belgian government's resignation over a politically sensitive linguistic dispute between Dutch and French speakers. As a result, an interim government (Martens VII) was formed with the same Christian-Democratic/Liberal coalition partners whose mandate was to prepare a revision of certain articles of the constitution, aimed at greater federalization of the Belgian state. Although the elections held in 1987 maintained this group, there is a long-term danger of preoccupation with linguistic issues, at the expense of concentrating on the budget deficit.

### **Monetary Policy**

Traditionally, Belgium has linked the stability of its currency, the Belgian franc, to other European currencies. However, with the loss of corporate competitiveness in the early 1980s, the franc was devalued in 1982 by 8.5 percent against all the European Monetary System (EMS) currencies except the Luxembourg franc and the Danish kroner. Belgium did not restore traditional linkage to the EMS until 1986, and today the Belgian franc is strong against most other European currencies.

The Belgian inflation rate is stabilized at 1.7 percent. This rate compares very favorably on an international basis. Only The Netherlands, Japan, and West Germany have lower inflation rates according to the OECD.

### **Trade and Economic Policies**

Foreign trade has always played a major part in the Belgian economic structure. As a member of the EC, Belgium follows trade policies much like those described earlier for The Netherlands.

### **Intellectual Property Protection**

#### *Patents*

Belgium subscribes to the International Convention for the Protection of Industrial Property and to the European Convention relating to the formalities required for patent applications.

Belgian patents are granted for a period of 20 years from the date of application (convention), on payment of an annual renewal fee. Prior to convention, the product must not have been described, patented, or used anywhere. An invention that has become known abroad as a result of official publication by foreign patent offices can be protected in Belgium by a patent of importation, which expires at the same time as the original foreign patent.

A patented invention should be used in Belgium within one year of its first commercial application abroad. An invention covered by a patent of importation should be used within four years of the grant in Belgium.

#### *Trademarks*

The Benelux Trademark Law came into force on January 1, 1971. By its terms, the first applicant for a trademark is entitled to exclusive use of the trademark upon registration. A registration lasts for 10 years, and it may be renewed if application is made within a period of six months prior to expiration. However, failure to make normal use of a mark during the first three years after registration will lead to its cancellation.

## **BELGIUM'S FOREIGN RELATIONSHIPS**

### **Relationship to the United States**

Much like The Netherlands, Belgium has been a highly active trading partner with the United States. Belgium is one of the few European countries with which the

United States maintains a balanced trade. The major imports from the United States in 1986 were:

- Coal
- Soybeans
- Diamonds
- Aircraft
- Data processing machinery

The major exports to the United States in 1986 were:

- Diamonds
- Passenger motor vehicles
- Films
- Silver
- Spare parts (motors)
- Iron

Again, as in The Netherlands, if the U.S. dollar remains low, imports of U.S. goods can be expected to increase.

## **LUXEMBOURG**

According to the OECD, Luxembourg's macroeconomic performance has remained highly satisfactory. Its growth rate continues to be around the European average, and the country's unemployment and inflation records are among the best in the OECD area. However, as is the case in Luxembourg's sister country, Belgium, the steel industry has not done well recently.

As in Belgium, the steel industry is an important element in the Luxembourg economy. Unlike Belgium, however, Luxembourg adjusted much more quickly to the changing worldwide steel demand that shook the Belgian economy. This easy adjustment was due in part to a prescient restructuring program began in 1974. At a time when other European steel producers were expanding capacity, Luxembourg embarked on an industrial diversification program that reduced its reliance on any one industrial sector. Since 1977, the Luxembourg government has concentrated on expanding the country's banking and financial sectors.

Unlike Belgium, Luxembourg does not have a massive budget deficit. The current account balance, which was already equivalent to 6 percent of GDP in 1970, was up to 33 percent in 1985.

Although financial activity is expanding, the stock market crisis has introduced new uncertainty into the Luxembourg economy. With industry sector problems exacerbated by the slowdown in foreign demand, growth could well slacken appreciably in 1989.

## INVESTMENT CONSIDERATIONS IN BELGIUM

### Direct Foreign Investment

At the heart of a European market approaching 320 million affluent customers, Belgium was chosen as the natural headquarters for the European Community, and more than 1,000 leading businesses have followed suit. The Belgian labor force has a reputation for being one of the most productive in the world, while remaining cost-competitive with other industrialized countries. Because Belgium exports more than 80 percent of its gross national product (GNP), compared with 6 percent for the United States and 14 percent for export-oriented Japan, Belgium has little to gain from protectionism. Special attention is being given to attracting future-oriented industries such as biotechnology, microelectronics, and new materials. A highly qualified work force and excellent transportation connections across Europe encourage such industries as aerospace, robotics, and telematics. Today, Belgium has the greatest concentration of foreign investors on earth.

As part of its policy of welcoming foreign investment, the Belgian government offers various public incentives for business, open to all corporations operating in Belgium, be they Belgian or foreign.

### Investment Incentives

A general investment subsidy is available, ranging in value to a maximum of 24 percent of the eligible investment. This subsidy may be granted as an interest rebate, a capital grant, or a combination of both. The size of the enterprise, the strategic impact of the project, and job creation are factors influencing the final subsidy.

### *Specific Tax Incentives*

A group establishing a coordination center in Belgium is granted a special tax status for a period of 10 years, subject to compliance with certain conditions. These conditions include the following:

- That the center be incorporated as a company in Belgium or a branch of a foreign corporation

- That the center form part of a multinational group with subsidiaries in at least four other countries
- That the center employ at least 10 persons within two years of the start of its operations
- That the center be located at one of six tax-free employment zones (Tessenderlo, Geel-Punt, Ieper, Liege, Marche-en-Famenne, or Hainaut)
- That the operations be in research and development of high-technology products or connected with one of the following:
  - Advanced information technology
  - Software technology
  - Micro/optical electronics
  - Office automation
  - Robotics
  - Telecommunications
  - Biological engineering
  - Other “spearhead” technologies

Tax benefits are also granted to companies involved in innovation projects and to businesses located in reconversion areas (coinciding with existing development zones). Regardless of its activity or legal form, a company will be able to deduct a percentage of its research and development costs and energy conservation expenditure up to a maximum of 20 percent.

### *Research and Development (R&D) Incentives*

Interest-free advances can be granted for prototype and R&D projects to help with salaries, equipment, operational expenses, patent licensing costs, and a limited number of prototypes. Subsidies can also be provided to cover a proportion of all the expenditures incurred by a company in a research project.

### *Employment and Training Incentives*

In addition to the higher investment subsidy for creating jobs, there are three other forms of incentive related to employment:

- Reduction in salary and social security costs for projects linked to development of new products or production processes, to export promotion, or to energy/raw materials savings



- Tax cuts for additional jobs
- A tax-free reserve to cover possible redundancy costs

Newly established enterprises can receive training grants, covering up to 50 percent of the wage and social security costs on the basis of once-per-trainee per job. Living and traveling expenses are also allowable. Fully unemployed persons receiving unemployment benefits can be eligible for individual training schemes. The National Employment Office (ONEM-RVA) can be used, free of charge, for personnel selection from the unemployed pool.

These incentives are available to all companies operating in Belgium, whether Belgian or foreign, and cumulation possibilities exist according to the region where the investment is made.

### Investment Opportunities

More than 900 U.S. companies have operations in Belgium, nearly 400 of which are regional headquarters. The U.S. Department of Commerce, through the U.S. Embassy in Brussels, has identified a number of key industrial sectors for trade opportunity. In particular, U.S. computer vendors have great opportunities in Belgium. While the following discussion describes the Belgian computer market as a whole, it does provide an indirect indication of hardware purchasing trends for the CAD/CAM industry in Belgium.

The estimated value of the Belgian computer hardware market in 1987 was \$932 million (assuming that F 37 equals US\$1), more than 70 percent of this revenue coming from hardware sales. Annual real growth of 15 percent is expected through 1990.

In terms of hardware platforms, U.S. equipment dominates host and non-UNIX workstations, while PCs are increasingly imported from European manufacturers. PC clones from the Far East are also gaining a secure foothold. Local industry sources have stressed that the mainframe market is saturated.

At present, the minicomputer market, with an estimated 55 percent share of the total installed base, is the most promising sector for hardware manufacturers. PCs are also enjoying considerable popularity. For Belgium, a country with few large enterprises and many small to medium-size companies, minicomputers, and particularly PCs, are more affordable.

Belgium is almost totally dependent upon foreign suppliers for its computer-related needs. U.S. products will continue to dominate the hardware market in Belgium, although there is increasingly stiff competition from producers of lower-end machines and the newly introduced UNIX-compatible minis. In a multiuser/multitasking minicomputer sector, the market is considerably more fragmented and offers greater promise

to European computer manufacturers. In the PC market as a whole, the sale of IBM PC clones accounted for 30 to 40 percent of the Belgian market in 1986 and potentially could rise to 50 percent in 1987.

### **OTHER BUSINESS CONSIDERATIONS IN BELGIUM**

#### **Company Law**

Companies incorporating in Belgium have the option of operating as a subsidiary (incorporated under Belgian law) or as a branch of a company (incorporated under foreign law). Though Belgian law recognizes various forms of enterprise, the most common is, in EC parlance, the Public Limited Company (PLC, or Naamloze Vennootschap in Flemish). This is the most usual form for foreign investors. There must be at least two shareholders, who may be individuals or companies (resident or non-resident) and are responsible for the capital that they contribute. Minimum capital may not be less than F1,250,000, and this must be completely underwritten.

Branches are governed by the same rules as Belgian companies for management and operation in Belgium. The foreign-registered company must deposit a copy of its Articles of Association, and its Resolution to set up a Belgian branch with the Clerk of the Commercial Court.

Often, a good approach for a foreign investor is to seek establishment by the takeover of an existing company or by a joint venture or merger with a company already active in the field. For the latter, no prior authorization is required; for a takeover, however, the person or company making the bid is required to lodge particulars with the Banking Commission 15 days before the bid is made.

#### **Taxation**

Belgium has four main forms of taxation:

- Income tax
- Company tax
- Taxes on nonresidents
- Value-added tax

### *Income Tax*

No income tax is payable on income below F 100,000. Although the top rate of tax is 76.32 percent on income over F 4 million, the total income tax on any one individual cannot exceed 71.55 percent.

### *Company Tax*

Company tax currently is 43 percent, but reduced rates are applied to low taxable profits (below F 16.6 million). Foreign-source income that is not exempted by inter-governmental treaty is subject to one-quarter of the normal corporate income tax rates if it is earned and taxed abroad.

### *Taxes on Nonresidents*

The Belgian branch of a foreign company is normally subject to nonresident income tax at 48 percent on all profits attributable to it, so the branch will often maintain separate accounting records from the parent company. Reductions are sometimes available if double taxation treaties exist between the relevant governments. A branch qualifies for between 90 and 95 percent exclusion on intercorporate dividend income.

### *Value-Added Tax*

Value-added tax, calculated on the c.i.f. value plus any other excise duties that may have been levied, is payable upon entry into the country. Five possible rates for the tax on goods are 6 percent (mainly for foodstuffs), 17 percent, 19 percent (standard rate), 25 percent (luxury tax), and 33 percent (special tax).

## **INVESTMENT AND OTHER BUSINESS CONSIDERATIONS IN LUXEMBOURG**

### **Direct Foreign Investment**

The 1977 policy of industrial diversification was a major factor accounting for Luxembourg's relatively stable economic position today. Through public investment incentives and an active policy of prospecting for opportunities for direct foreign investment, more than 70 new ventures have been established in Luxembourg since 1975, alongside the 200 to 250 old-style industrial businesses. On the balance, the jobs created by the new industries since the 1960s have more than made up for the job losses in steel since 1974. The depreciation of the U.S. dollar could, however, diminish the appeal of Luxembourg for foreign investors, particularly American investors. The 1986 frame law on economic expansion, which will offer large subsidies for businesses promoting new industries (e.g., high technology), is expected to attract new investments.

### Other Business Considerations

Specific business practices and corporate tax incentives resemble those for Belgium.

### CAD/CAM

All the major worldwide CAD/CAM vendors are present in the Benelux region and have been for some years. Many U.S. vendors have selected The Netherlands as the location of their European headquarters. Belgium is relatively underdeveloped, with the main development occurring since the arrival of the European Parliament. There are few local vendors.

The Netherlands, where English is the second language, is a natural alternative to the United Kingdom for U.S. vendors. From a language point of view, the Benelux areas are complex. Dutch, English, and German are spoken in The Netherlands; French, Flemish and German are spoken in Belgium, although there are no obvious boundaries. In Belgium, it is important to recognize these traditions. A sale can be lost if the salesman speaks to the prospect in the wrong language.

The Dutch CAD/CAM industry is very mature, with extensive expertise in the market and high standards.

### REGULATORY AGENCIES AND TRADE ASSOCIATIONS

#### The Netherlands

##### *CAD/CAM Industry Information*

Two principal agencies specialize in CAD/CAM activities in The Netherlands. They are CIAD and Vifka. In addition, a journal called *CAD/CAM* also provides general information on CAD/CAM activities, and information regarding CAD/CAM vendors in The Netherlands may be obtained by requesting a catalog of Industriële Automatiserings Beurs from the RAI at Amsterdam. The organizations, their addresses, and their functions are listed in Table 2.3-1.

##### *General Business Information*

Information on business and investment in The Netherlands is available from the following organizations:

- Netherlands Foreign Investment Agency  
One Rockefeller Plaza  
New York, NY 10020  
Tel: 212-246-1434

- Netherlands Foreign Investment Agency  
Head Office  
91 Bezuidenhoutseweg  
P.O. Box 20101  
2500 EC The Hague  
Netherlands  
Tel: 011-31-70-797233
- Dutch Association of Participating Companies  
(Nederlandse Vereniging voor Participatiemaatschappijen - NVP)  
Princess Beatrixlaan 5  
Postbox 93093  
2509 AB The Hague  
Netherlands  
Tel: 011-31-70-471111

Table 2.3-1

## CAD/CAM-Related Business Organizations--The Netherlands

Agency	Address	Functions
CIAD	P.O. Box 74 2700 AB Zoetermeer, Netherlands	CAD/CAM Society; also publishes <i>Ciadscope</i>
Vifka	CAD/CAM Division Kampeuringweg 45, 2803 PE Gouda, Netherlands	Information on CAD/CAM trade fairs and events
VNU Business Publications	Bedrijf, Rijnsburgstraat 11, 1059 Amsterdam, Netherlands Tel: 011-31-20-5102878	Publishes <i>CAD/CAM</i> , the main journal
Cape Congress	Gebouw BV Europaplein 1978 GZ Amsterdam Tel: 011-31-20-5491212 Telex: 16017	Publishes CAD/CAM vendor catalog

Source: Dataquest  
April 1989

In addition, the following three principal organizations deal with export information in The Netherlands:

- The Netherlands Foreign Trade Agency (EVD), which is part of the Ministry of Economic Affairs
- The Dutch Center for Trade Promotion (NCH), which is a mixed governmental and private organization
- Fenedex, which is the Federation of Dutch Exporters (Federatie voor de Nederlandse Export)

Information regarding these organizations may be obtained by writing The Netherlands Foreign Investment Agency.

### Belgium

General Belgian business information is available from the sources shown in Table 2.3-2.

### Luxembourg

At this date, no trade association or business agency information is available for Luxembourg.

## STANDARDS

At this date, information is quite limited regarding standards organizations in The Netherlands and Luxembourg. For Belgium, export agencies such as the British Technical Help for Exporters (THE) will provide current information concerning statutory requirements and technical specifications. The service can also provide technical translations, for which there may be a charge. The address is The British Standards Institution, Linford Wood, Milton Keynes, MK14 6LE (Tel: 0908 320033).

Table 2.3-2

### Business Information Sources—Belgium

Source	Address
B.O.T.B.	EEB Belgium Desk Department of Trade & Industry 1 Victoria Street London SW1H 0ET Tel: 011-44-01-215-5486

(Continued)

Table 2.3-2 (Continued)

## Business Information Sources—Belgium

Source	Address
Ministry for Economic Affairs	23 Square de Meeus 1040 Brussels Belgium Tel: 011-32-2-5111930
Belgian Embassy	103 Eaton Square London SW1W 9AB Tel: 011-44-01-235-5422
Institut National de Statistique	Rue de Louvain 44 B-1000 Brussels Belgium
Generale Bank	Economic Studies Montagne du Parc 3 1000 Brussels Belgium
British Embassy	Rue Joseph II 28 B-1040 Brussels Belgium Tel: 011-32-2-2179000 Telex: (46) 22703
OECD Economic Surveys: Belgium & Luxembourg	Head of Publications Service OECD 2, rue Andre' Pascal 75775 Paris Cedex 16 France
Foreign Economic Trends and Their Implications for the United States Belgium (FET 88-03)	U.S. Department of Commerce International Trade Administration Washington, DC 20230

Source: Dataquest  
July 1988

### CAD/CAM PUBLICATIONS

#### The Netherlands

The main CAD/CAM trade journal in The Netherlands is *CAD/CAM*. However, CIAD, an industrial automation society, also publishes the journal *Ciadscope* for its members. Addresses for these organizations can be found in the "Regulatory and Business Agencies" section of this chapter.

#### Belgium

Table 2.3-3 lists the CAD/CAM publications available in Belgium, along with the addresses and telephone numbers of their publishers.

Table 2.3-3

#### CAD/CAM Publications—Belgium

Publication	Address	Telephone
Datanews	Diligentia Av du Houx 42 B-1170 Brussels	010-32-2-673 8170
Technische Revue	Hanzestraat 1 NL-7000 BA Doetinchem	010-31-8340-49 271
Technology-Transfer-Express	Bertemsebaan 1 B-3008 Veltem-Beisem	010-32-16-489 536
CAD/CAM Benelux	Belgotronic av. du Saphir 3 B-1420 Braine l'Alleud	010-32-2-354 0168
Technisch Management	De Sikkell Media Nijverheidsstraat 8 B-2150 Malle	010-32-3-312 4761
HCC Nieuwsbrief	Special Media Postbus 3300 NL-1001 CA Amsterdam	010-31-20-222 366

Source: Dataquest  
April 1989



## **Luxembourg**

At this date, no information on CAD/CAM publications is available for Luxembourg.

## **TRADE FAIRS**

### **The Netherlands**

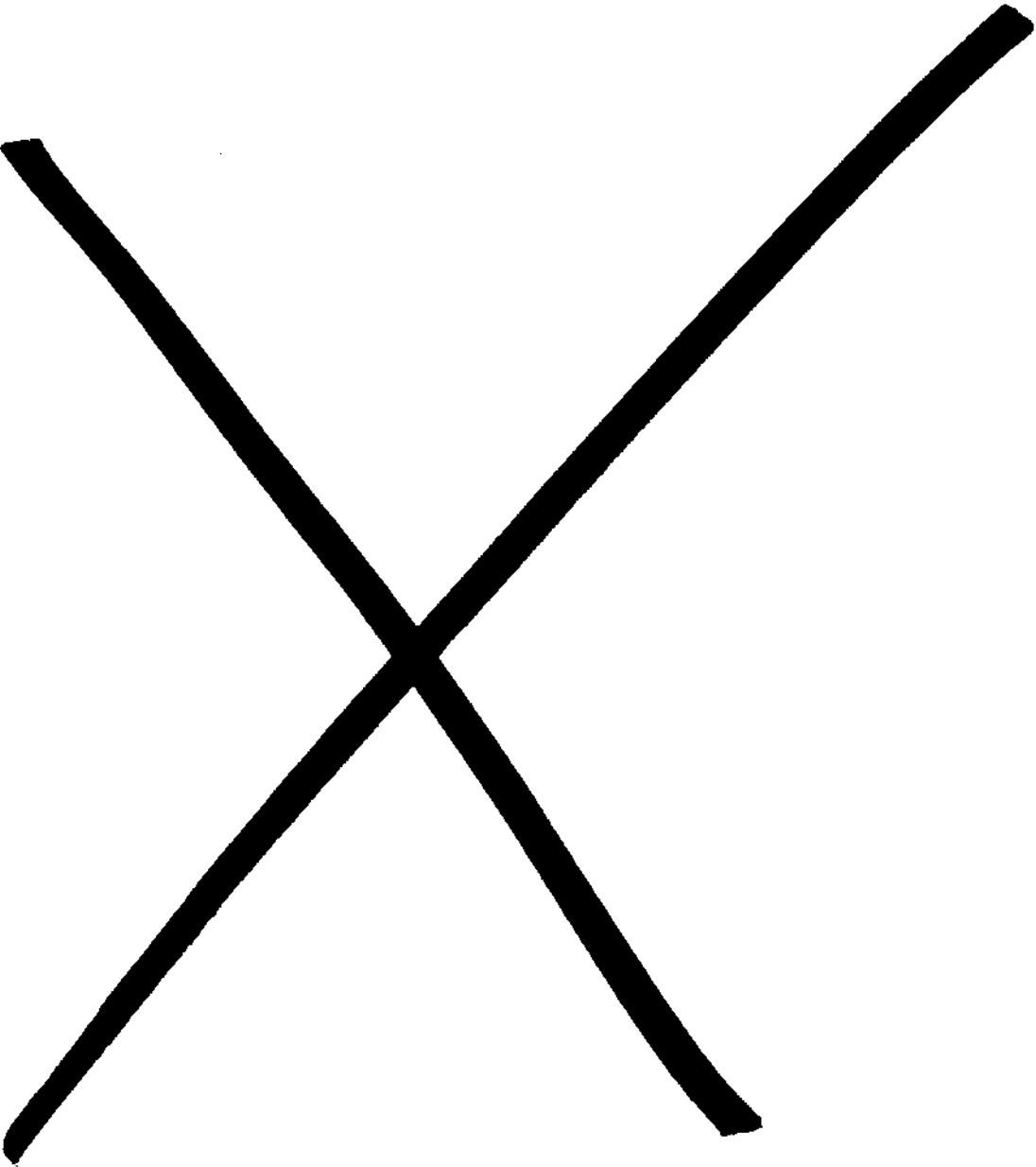
The Industrial Automation trade fair held in Amsterdam in mid-March received good reviews in 1987. Information on this event and locations of other CAD/CAM-related activities may be obtained from the CIAD and Vifka organizations. (See Table 2.3-1.)

### **Belgium**

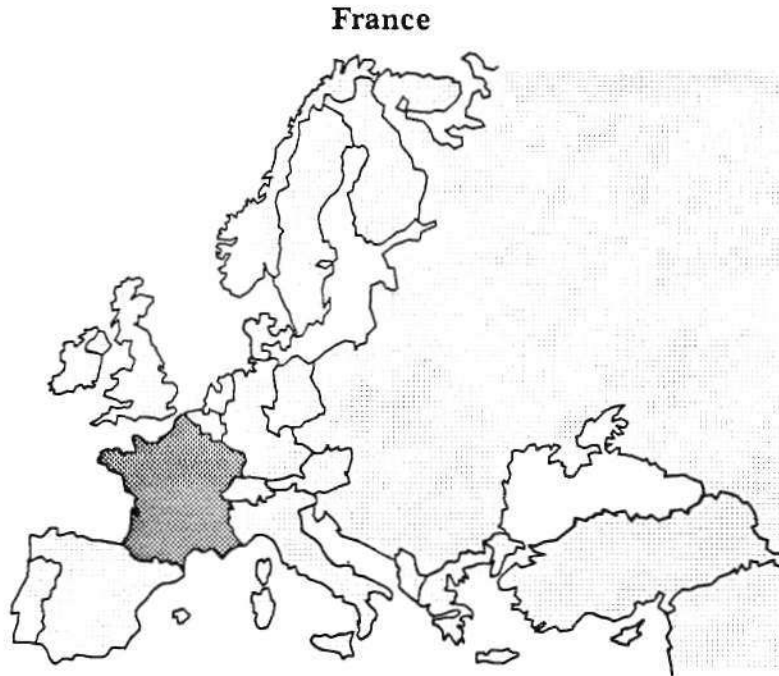
At present, there is only one specific CAD/CAM trade fair in Belgium. It is the "CAD/CAM Beurs," which takes place usually from November 22 through 24 in The Hallen in Kortrijk.

### **Luxembourg**

At this date, no information on CAD/CAM trade fairs is available for Luxembourg.



### 3.1 Geography and Demographics



Country Statistics		CAD/CAM-Related Data	
Total population (millions)	55.39	1988 Market size	
Area (square kilometers)	547,026	Revenue (millions)	\$531
Population density	101:1	Workstations shipped	14,977
		Installed base	41,456
Trade balance (US\$-billions)	(0.6)	<b>1988 Revenue Mix by Application</b>	
1988 GDP (1980 US\$-billions)	774.2		
1988 GDP (1980 FFr-billions)	3,266.8		
1989 real GDP growth rate (% est.)	2.6		
Structure of production (% 1985 GDP)			
Agriculture	4		
Industry	34		
(Manufacturing = 25%)			
Service	62		
1988 Exchange rate (FFr/US\$)	5.92		
1988 Unemployment rate (%)	10.5		
Total engineers	232,760	<div> <div>MCAD 65%</div> <div>AEC 9%</div> <div>Mapping 4%</div> <div>EDA 22%</div> </div>	
Electrical/electronic	55,200		
Mechanical	52,900		
Chemical/biological	30,130		
Metallurgical/materials	11,270		
Civil/architectural	37,030		
Others	46,230		

0003842-1

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

## **3.2 Government, Trade, and Economic Forces**

### **EXECUTIVE OVERVIEW: FRANCE**

The following summary highlights this region's major economic and political developments of 1988, and presents 1989 economic projections. It is based on reports from The WEFA Group (Wharton Econometric Forecasting Associates).

- According to government statistics, France's 1988 GDP growth reached 3.6 percent, fueled mainly by business investment. Despite slow growth in personal income, real consumer spending surged 7.2 percent.
- The sharp decline in the dollar that followed the U.S. presidential election caused strong downward pressure on the French franc vis-a-vis the deutsche mark.
- France's 3 percent rate of inflation, although below the EEC average (4.1 percent), remains higher than Germany's inflation rate of 1.6 percent.
- The French government remains committed to a tight budgetary policy and to liberalizing the economy. The government has pledged to avoid any tax increase, except for a so-called "wealth tax," and to lift all international capital transfer controls. Its main priorities are employment, education, and industrial competitiveness.
- The French economy is forecast to grow at a more moderate 2.6 percent growth rate in 1989, fueled by a combination of investment and external demand.

## **3.3 Doing Business in France**

### **BACKGROUND ON FRANCE**

#### **General Considerations**

In 1986 and 1987, the economic climate was suitable for France to begin a slow expansion, which had not been possible since 1982. The French government, headed by President Francois Mitterrand and Prime Minister Jacques Chirac, pursued a liberal policy of privatizing large enterprises nationalized by the previous government, in an effort to ease the control of management and to bring down interest rates and taxes.

Wage-growth restrictions continued in 1987 and 1988. Share participation schemes offered by many larger concerns have helped to keep unrest among the work force at bay, while keeping the wage bill down. High unemployment persists, despite government-support initiatives. A temporary acceleration in inflation has been brought under control, and government borrowing remains at approximately 2.75 percent of GDP. Exports remain the most disquieting feature of the French economy, however. Negative net exports significantly slowed GDP growth, which is among the lowest of the major OECD (Organization for Economic Cooperation and Development) countries.

#### **Industrial Development**

France is a world leader in aerospace, banking, and high technology, particularly telecommunications. The following discussion highlights the status of those industries of particular interest to the CAD/CAM market.

##### *Telecommunications*

A total of 1.3 million home and office terminal telephones (minitels) had been installed by the end of 1985, part of a FFr 15 billion project by the French telecommunications authority, the PTT. Currently, the French PTT's Direction Generale des Telecommunications is establishing a nationwide integrated services digital network, which could make France the first country to offer nationwide telecommunications services. The network will eventually cover the Paris area and will be extended to include the cities of Rennes, Lille, Lyons, and Marseilles. The network currently supports some 300 users. Because of geographical limitations, the network currently is restricted to corporate communications. Some users are considering intercompany data and image exchange, and France's ambitions in this area have led recently to the construction of "intelligent buildings"—buildings with built-in networks.

In the field of telecommunications, France has seemingly adopted a policy of radical discontinuity, whereby areas of national excellence are developed to exploit and fill niches in the world market.

#### *Aerospace/Defense*

France continues to be a force in aerospace, an industry accounting for more than FFr 50 billion of sales in 1986, most of which were foreign-based. France serves as the hub of several important international aerospace projects, including:

- The Airbus consortium promoting commercial sales of wide-body aircraft
- The Ariane satellite program
- Hermes, the French-led space shuttle project in competition with the U.S. manned space program

#### *Automotive*

While the French are among the top five automakers in Europe, foreign manufacturers hold the greater share of the market (more than 40 percent of 1987 car sales). Since 1985, the French automakers have invested heavily in automation, however, following much the same pattern as U.S. automakers with the adoption of Japanese operating techniques. Also like the United States, France is focusing on increasing its market share in Asian markets.

#### *Construction/Civil Engineering*

The French construction industry continues to operate in a slump: Since 1985, new housing starts stabilized at approximately 295,000 units with very little growth anticipated in the short term. Nonetheless, the French support several major civil engineering projects, including the cross-Channel tunnel link with England as well as the extension of the nation's high-speed train network.

#### *Electronics*

The outlook for the French market for electronic components and production and test equipment is for real growth of 10 to 12 percent annually through 1989, with total demand reaching nearly US\$7 billion. The French are very motivated to achieve self-sufficiency in production of electronic components. This motivation is fueled by the need not only to ensure an adequate supply for France's defense industry but also to ensure international competitiveness in telecommunications, France's most nurtured high-technology product.

#### *Industrial Equipment/Machinery/Shipbuilding*

France ranks fourth in foreign export of industrial machinery, after West Germany, the United States, and Japan. Following the general upturn in the European shipbuilding industry, France is currently restructuring this sector to capitalize on growth activity.

## GOVERNMENT POLICIES

### The Economy

The current weakness of the French economy has been attributed to two primary forces: the overexpansionary policies of the period from 1981 through 1983 (designed to stimulate activity with higher real incomes) and an inherently rigid economic structure. Rigidity here refers to the tendency of most big companies, whether in industry, banking, or insurance, to be controlled by the state. To the outside view, the French economy appears almost to be a centrally planned economy; certainly the role of the state was enhanced during the socialist regime of 1981.

To many, the current weakness reflects these earlier policies. Since 1983, however, the French government has pushed an austerity program—one which effectively lifts the hand of the state from the economy. Some of the primary policies put forth in this plan were:

- Privatization
- Deregulation of French retailing practices
- Release of bank credit controls
- Release of foreign exchange controls

First, in 1986 and 1987, more than 13 state-owned firms were sold by the government. These included some nationalized by the socialist government: Saint-Gobain, Compagnie Generale d'Electricite, Paribas, Suez, and two major financial holdings groups. With some of the FFfr 67 billion grossed from sales, the government financed tax cuts and public works.

Second, the government also cut back on professional business regulations. Most notably, the government now has a hands-off policy regarding interfering with domestic takeovers (although it still retains the power to veto mergers).

Third, the elimination of credit rationing has effectively increased competition among the banks. Moreover, the banks must now compete with money markets for credit business.

Finally, the French monetary authorities no longer control the French banks' lending of francs abroad.

These policies all signal a split from the rigidities of central control. Although improving the French economy is still an ongoing process, there are indeed measurable positive effects that can be traced to these changes.

#### Finances

The budget deficit was reduced in 1987 for the second consecutive year—to 2.4 percent of GDP from 3.3 percent in 1985. Over the same period, taxes were reduced by FFr 40 billion. Opposing this, growth of spending was curbed by layoffs, slower wage growth, and reductions in subsidies and interest-rate relief. The growing number of privatizations yielded an additional FFr 50 billion in 1987, 30.0 percent of which was devoted to equity funding for public enterprises. The budget for 1988 proposed a further reduction in the deficit (to FFr 115 billion) and provided for tax cuts of FFr 32 billion; in particular, the corporation tax rate was reduced to 42.0 percent. In the future, telecommunications will be subject to value-added taxation (VAT), which will be beneficial to business enterprises because communications costs will become tax deductible.

The social security system continues its steep growth in expenditures. Although increased personal contributions have resulted in a considerable reduction in this deficit, it is expected to widen again (to FFr 34 billion) unless policy is changed. A further increase in contributions to match the projected deficit looks likely.

#### Employment

Employment-support policy will continue to be one of the most important components of budget expenditure, with the emphasis on youth-integration schemes and assistance to the long-term unemployed. Training courses to initiate young people into working environments produced approximately 100,000 jobs during 1987, and the aim now is for 250,000 new traineeships, to include those who have been unemployed for longer than one year. Efforts are being made to achieve greater labor flexibility, and regulations governing working hours have been considerably relaxed. In 1970, average weekly hours worked were 44.7. In 1985, the work week had decreased to 39.0 hours. Furthermore, companies making investments that serve to promote regional development may qualify for partial or total exemption from local business taxes for up to five years.

#### Government R&D Projects

Compared with other leading industrial nations, France does not take an aggressive stance on nonmilitary research and development (R&D). The government spends only 1.8 percent of GDP on R&D projects, compared with 2.5 percent in West Germany and 2.6 in Japan. Moreover, France has fewer scientists and engineers (400,000) than Britain (700,000) and West Germany (600,000).

However, the government continues to support certain key high-technology areas, especially telecommunications and research-industrial parks.



*Orleans, the Technopolis*

The French government continues to promote the Orleans area as a high-quality technology and industrial center. More than 25 percent of the industrial companies in the area are owned by foreign investors, and the wide variety of industrial activities has encouraged development of the banking sector. More than 20 banks and financial institutions are represented, including the French Bank of Foreign Trade (BFCE), which specializes in helping companies with their import-export operations.

The demographics of the Orleans industrial sector are shown in Table 3.3-1.

Located 70 miles south of Paris, Orleans has a population of more than 250,000 people and houses the University of Orleans, a number of research centers, and the Technology Innovation Center.

**Table 3.3-1**  
**Structure of Orleans Industry**

<b>Industrial Activity</b>	<b>Number of Companies</b>	<b>Number of Employees</b>	<b>Work Force Percentage</b>
Electricity/ Electronics	114	12,317	21.7%
Mechanics/Automobiles/ Aeronautics	200	11,411	20.1
Metallurgy	173	6,179	10.9
Chemistry	227	13,751	24.2
Food/Agribusiness	435	5,354	9.4
Printing/Wood Products	271	4,739	8.3
Textiles/Leather	90	2,777	4.9
Energy	10	302	0.5
<b>Total</b>	<b>1,520</b>	<b>56,830</b>	<b>100.0%</b>

Source: French Ministry  
of Transport

*University of Orleans.* The university, with an enrollment of approximately 8,000 students, specializes in economics, accounting, international marketing, management, law, and the physical sciences. In 1983, the University of Orleans created a department of economic relations that acts as a liaison between research teams and industry. By 1985, more than 100 contacts had been negotiated with industry.

The university has approximately 665 scientists and researchers involved in both fundamental and applied research. The following fields of research are of particular interest to the CAD/CAM industry:

- Automation
- Computer science
- Energy and materials
- Chemistry

*Research Centers.* In addition to the university, Orleans is the home of several other research centers, including the following:

- National Center of Scientific Research (CNRS)
- Geological and Mine Research Bureau (BRGM)
- School of Material and Energy Engineering (ESEM)
- National Institute for Agronomical Research (INRA)
- National Audio-Visual Institute (INA)

CNRS (consisting of 10 specific laboratories), BRGM, and INRA span a wide range of scientific research areas. As of 1987, their research personnel included approximately 1,600 people with an annual budget the equivalent of US\$83 million.

*The Technology Innovation Center.* To promote exchange between the research centers and industry, Orleans has created the Technology Innovation Center, which includes office space for high-technology companies.

The center will offer the following services to companies:

- Serve as a base for technology transfer, coordinating contracts between the research centers and industry
- Provide technical training centers, especially for:
  - Automation

- CAD/CAM
- Communications
- Provide administrative and marketing services, especially for innovative products and technologies
- Provide a high-technology park (The Orleans Espace, located in a landscaped area to the northeast of the university, will provide space for about 30 companies.)

#### *Lorraine—Emerging Technology Center*

The French border province of Lorraine, once the heart of the steel industry, has recently been promoted as another high-technology center. Lorraine's principal advantage stems from its geographical position. Set at a European crossroads, the province has highways and railways radiating to other parts of France as well as neighboring Belgium, Germany, Italy, and Switzerland. Moreover, an international airport is soon to be built at Louvigny.

Another lure for foreign businesses has been the generous French subsidies from the Lorraine Industrial Development Association, a joint effort by France's central and local government authorities in partnership with regional businessmen. In addition, Lorraine is also recognized for the quality of the local work force; the people are very industrious and, in many cases, speak both French and German. This linguistic advantage is well appreciated by foreign companies. Although currently no local source of engineering and technical talent exists, the future University of Nancy, planned to be the largest university in eastern France, will soon be a ready source for high-technology businesses.

Two prominent CAD/CAM vendors in this area are Computervision and France's Thomson SA. Computervision uses its Lorraine facility to integrate assemblies from the U.S. plant with subassemblies made by European original equipment manufacturers (OEMs).

### **FRANCE'S RELATIONSHIP WITH THE UNITED STATES**

#### **U.S.-French Industrial Relations**

U.S.-French trade totaled nearly \$20 billion in 1987, with the United States having an estimated \$8 billion investment in France. The greatest investment opportunity is for small to medium-size companies. This opportunity is fueled principally by the French government's support of small U.S. businesses. In 1987, sales of small to medium-size

U.S. companies grew 12 times faster than those of larger companies; many of these were established in France. Therefore, continued efforts are encouraging industry relations not only through government-sponsored programs but also through tax incentives.

#### *French-American Cooperation and Entrepreneurship and Technology*

The French-American Cooperation and Entrepreneurship and Technology (FAC-ET) program was established in 1986, principally to help small and medium-size high-technology firms enter the U.S. market or the European Economic Community, chiefly using France as a gateway.

For U.S. companies, the government provides help in the form of access to data bases or networks of possible partners, to industry experts, and to financial institutions and venture capitalists for funds. This program is principally designed for small companies with the following (ideal) qualifications:

- Has between 30 and 300 employees
- Has an innovative technology application
- Has no previous involvement with a foreign joint venture
- Has no more than 49 percent of its capital held by a large corporation

This program is led jointly by the U.S. Department of Commerce and the French government research agency, ANVAR.

#### *U.S.-French Income Tax Treaty*

In early 1988, U.S. and French officials met to revise the income tax treaty of 1967. The negotiations included tax law changes made in the 1986 Tax Reform Act, such as the branch profits tax and the antitreaty shopping rules. The revisions addressed the French taxation of certain U.S.-based investment income of the U.S. citizens residing in France.

## **INVESTMENT CONSIDERATIONS**

### **Direct Foreign Investment**

Any nonresidential investor who wishes to make a direct investment in France must file a Prior Declaration with the Ministry of Economy, which sets out all details of the proposed transaction, and await authorization to proceed. Generally, the Ministry of Economy will authorize the foreign investment within two months of the date of the Prior Declaration.

The Prior Declaration should be filed with one of the following:

- The Bank of France (for real estate businesses)
- Ministry of Economy (for all other businesses)

Forms are available at the DATAR (French Industrial Development Board) offices. The addresses of the Bank of France, the Ministry of Economy, and DATAR are listed in Table 3.3-2.

**Table 3.3-2**

**Investment Contacts in France**

Entity	Address	Comments
Ministry of Economy	Ministere de l'Economie Direction du Tresor 151 Rue St. Honore 75001 Paris	To file for a business license
The Bank of France	Banque de France Service des Autorisations Financiers 39 Rue Croix des Petits Champs 75001 Paris	To file for a business license (real estate only)
French Industrial Investment Board	Mr. Pierre Bourgoin DATAR 21-24 Grosvenor Place London SW1X 7HU Tel: 01-235-5148	For information on investment incentives

Source: Dataquest  
April 1989

However, nonresidents of the EC are exempt from filing a Prior Declaration under the following circumstances:

- When the investor expands or creates new branches of an existing business
- When the investor participates in a new business to create lasting economic ties (for an existing business)
- When the investor participates in an existing business to create lasting economic ties, provided that the investment does not exceed FFr 10 million and that the existing business is not already under foreign control

#### Investment Incentives

The French investment incentives system is designed to encourage industrial projects that will contribute to a better and more-balanced growth in France. Investment incentives include the following:

- **Regional Development Grants**—Available for industrial, nonindustrial, and research operations of between FFr 35,000 and FFr 50,000 per job
- **Small Business Grants**—Available for assisting new, small businesses to create jobs or for existing ones to increase their staffs (For each of the first 30 new jobs created or preserved, the grant is between FFr 10,000 and FFr 40,000, depending on the location.)
- **Tax Concessions**—Available for companies that make investments promoting regional development (These companies may be eligible for partial or total exemption from the local business tax for up to five years, for a reduction in transfer taxes, and for accelerated depreciation of new construction.)
- **Low-Interest Loans**—Subsidized by the French government; designed to help in the acquisition of tangible assets
- **Job-Training Subsidies**

For detailed information on any of the above subjects, one should contact the local office of DATAR (Delegation a l'Amenagement du Territoire et a l'Action Regionale) (see Table 3.3-2).

#### OTHER BUSINESS CONSIDERATIONS

##### Company Law

The two types of companies most frequently used by investors in France are as follows:

- **Société Anonyme (SA)**
- **Société a Responsabilite Limitee (SARL)**

The latter is easier to set up and involves fewer formalities. Only two members are required, and the minimum capital necessary is FFr 50,000. In contrast, an SA must have a minimum of seven shareholders and available capital of FFr 250,000.

## Taxation

Corporation tax, currently 50 percent, is payable on gross profits, but proposals are in effect to reduce it to 42 percent. A minimum corporation tax is payable, even if the company is not profitable. The tax ranges from FFr 4,000 to FFr 17,000, depending on revenue. Other taxes levied include capital gains, registration duty (payable at the time of incorporation), value-added tax, business expense tax (in an effort to encourage enterprises to reduce certain nonessential expenditures), and local taxes.

## CAD/CAM Business Development Agencies

The principal agency providing investment information for France is the Agence Nationale du Developement de la Productique (ADEPA). In addition, information on French regional markets is available from country and commodity specialists at the International Economic Policy Desk (IPD) of the U.S. Department of Commerce.

Table 3.3-3 lists the address of the ADEPA, along with the addresses of other helpful agencies.

## French Standards Institution

The French standards institution is the AFNOR (Association Francaise de Normalisation). It determines standards and arranges to have products new to the French market tested. A procedure known as "homologation" may be required if no norms exist that are covered by AFNOR or legal specifications. (See Table 3.3-3.)

Table 3.3-3

### CAD/CAM Business Contacts in France

Entity	Address	Comments
CAD/CAM Business Development Agency	ADEPA 17 Rue Perier 92120 Montrouge France Tel: 010-33-14-657-1270	President: Michel Barba
French Standards Institute	AFNOR Address not available.	
French Patent Office	INPI Division des Marques 32 Rue des 3 Fontanot 92016 Nanterre Cedex	

Source: Dataquest  
April 1989

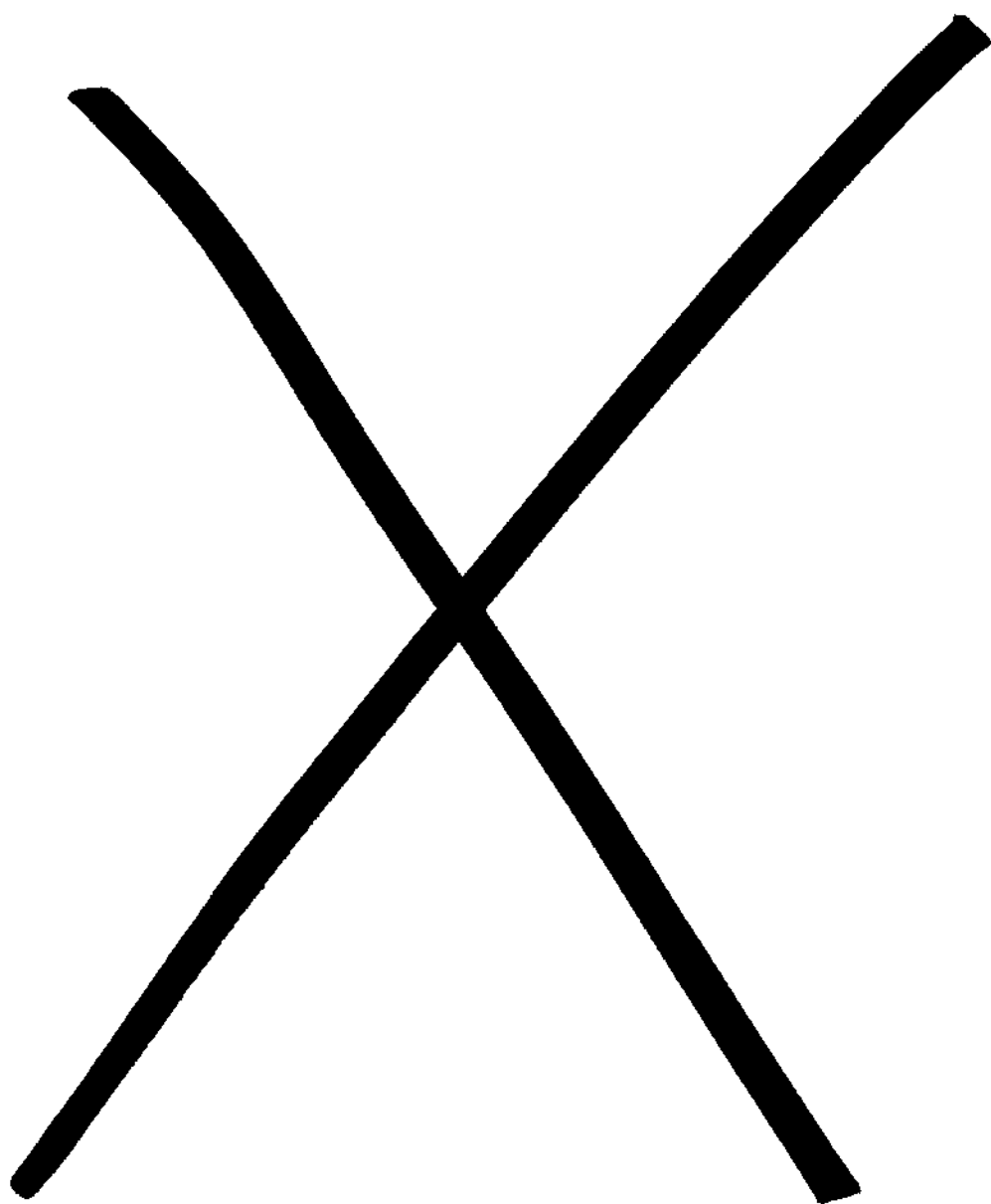
#### Patents and Trademarks

Applications to register a patent in France should be made in French to the L'Institut National de la Propriete Industrielle (INPI). An application should contain the following:

- The formal document asking for registration
- Two copies of a full description of the invention
- Two copies of any necessary designs
- A brief summary of the invention (maximum of 15 lines) for publication purposes
- Models or samples

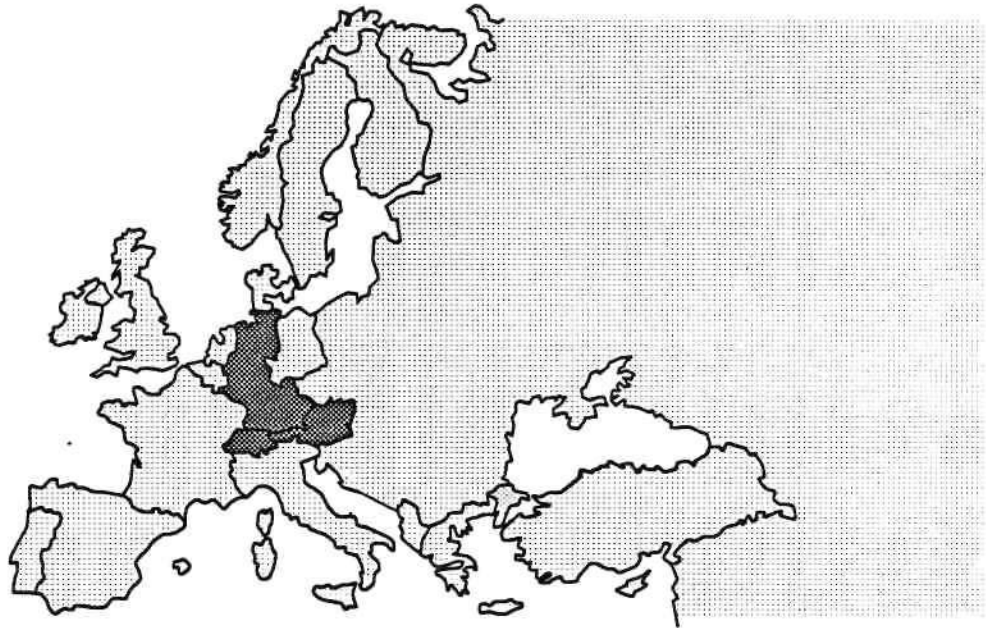
See Table 3.3-3 for the addresses of the trademark office and INPI.





## 4.1 Geography and Demographics

German Region

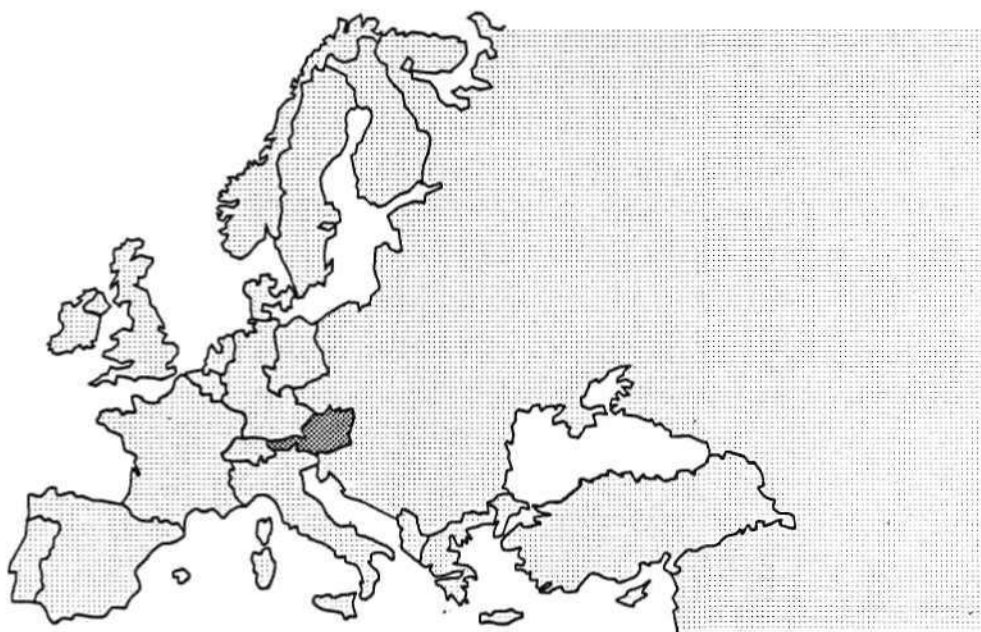


Regional Statistics		CAD/CAM-Related Data	
Total engineers	635,100	1988 Market size	
Electrical/electronic	N/A	Revenue (millions)	\$1,183
Mechanical	N/A	Workstations shipped	39,590
Chemical/biological	N/A	Installed base	84,029
Metallurgical/materials	N/A	1988 Revenue Mix by Application	
Civil/architectural	N/A	<p>A pie chart illustrating the distribution of CAD/CAM revenue in 1988. The chart is divided into four segments: MCAD (63%, represented by diagonal lines), AEC (11%, represented by a dark solid color), Mapping (4%, represented by a cross-hatch pattern), and EDA (22%, represented by a white/unfilled color).</p>	
Others	N/A		
N/A = Not Available		<div> <div>MCAD 63%</div> <div>AEC 11%</div> <div>Mapping 4%</div> <div>EDA 22%</div> </div>	

0003843-1

Source: U.S. Department of Commerce  
The World Bank  
Dataquest  
April 1989

## Austria

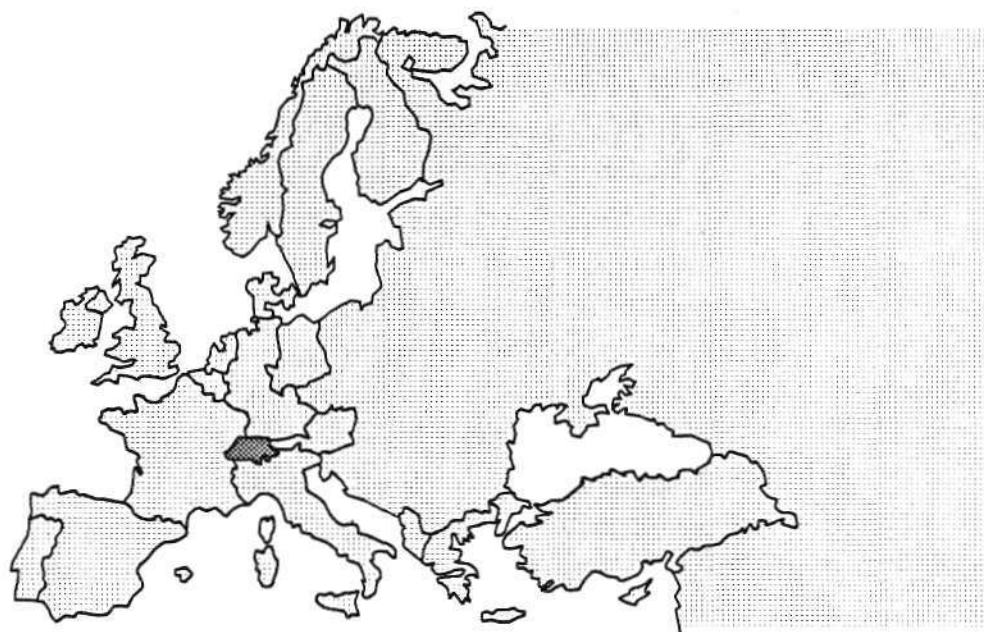


Country Statistics			
Total population (millions)	7.56	1988 Exchange rate (S/US\$)	12.35
Area (square kilometers)	83,849		
Population density	90:1	1988 Unemployment rate (%)	3.8
Trade balance (US\$-billions)	(7.0)	Total engineers	67,700
1988 GDP (1980 US\$-billions)	88.7	Electrical/electronic	13,464
1988 GDP (1980 S-billions)	1,145.2	Mechanical	7,401
1989 real GDP growth rate (% est.)	2.5	Chemical/biological	687
Structure of production (% 1985 GDP)		Metallurgical/materials	3,639
Agriculture	3	Civil/architectural	20,407
Industry	38	Others	22,102
(Manufacturing = 28%)			
Service	59		

0003843-2

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

## Switzerland

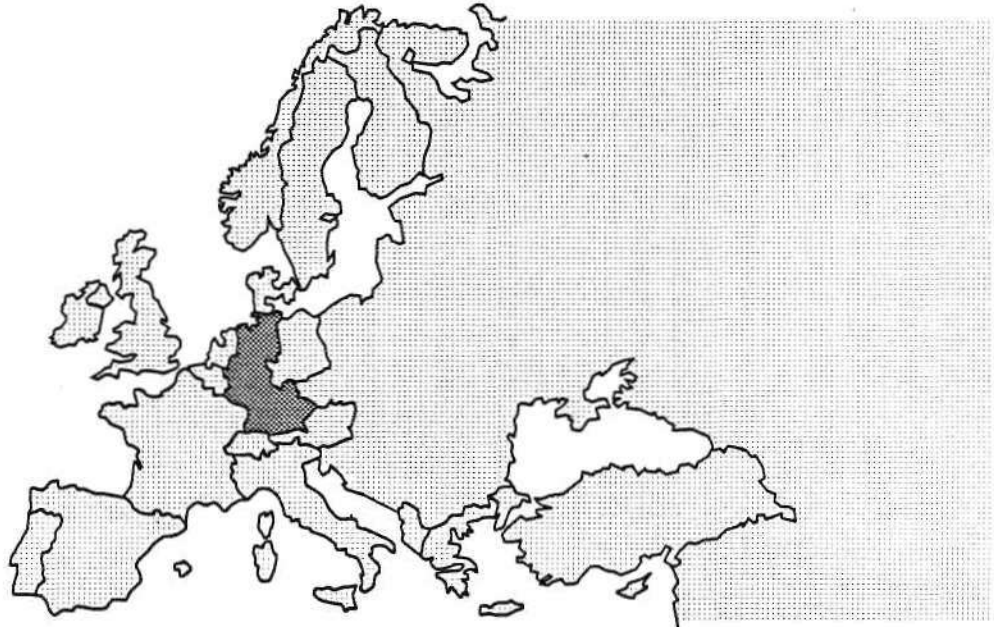


Country Statistics			
Total population (millions)	6.5	1988 Exchange rate (SFr/US\$)	1.45
Area (square kilometers)	41,293		
Population density	157:1	1988 Unemployment rate (%)	0.6
Trade balance (US\$-billions)	(7.1)	Total engineers	60,000
1988 GDP (1980 US\$-billions)	117.4	Electrical/electronic	N/A
1988 GDP (1980 SFr-billions)	196.5	Mechanical	N/A
1989 real GDP growth rate (% est.)	2.5	Chemical/biological	N/A
Structure of production (% 1985 GDP)		Metallurgical/materials	N/A
Agriculture	NA	Civil/architectural	N/A
Industry	NA	Others	N/A
(Manufacturing NA)			
Service	NA		
		N/A = Not Available	

0003843-3

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

## Federal Republic of Germany



Country Statistics			
Total population (millions)	61.05	1988 Exchange rate (DM/US\$)	1.75
Area (square kilometers)	248,577		
Population density	246:1	1988 Unemployment rate (%)	8.8
Trade balance (US\$-billions)	66.0	Total engineers	507,400
1988 GDP (1980 US\$-billions)	933.3	Electrical/electronic	80,500
1988 GDP (1980 DM-billions)	1,693.4	Mechanical	77,900
1989 real GDP growth rate (% est.)	2.5	Chemical/biological	N/A
Structure of production (% 1985 GDP)		Metallurgical/materials	N/A
Agriculture	2	Civil/architectural	147,900
Industry	40	Others	N/A
(Manufacturing = 31%)			
Service	58		
		N/A = Not Available	

0003843-4

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

## **4.2 Government, Trade, and Economic Forces**

### **EXECUTIVE OVERVIEW: GERMAN REGION**

The following summary highlights this region's major economic and political developments of 1988, and presents 1989 economic projections. It is based on reports from The WEFA Group (Wharton Econometric Forecasting Associates).

#### **Germany**

- According to the Federal Statistical Office, Germany's 1988 growth rate, at 3.4 percent, was the highest since 1979.
- Despite this growth, certain sectors of the economy, such as private consumption, are exhibiting a slowdown. These declines, however, are being fully offset by increases in investment activities, particularly in residential investment.
- Export performance is expected to remain strong in both the long and medium terms, due to Germany's low inflation rate. Because approximately half of Germany's exports currently go to other EC countries, and because EC exchange rates remain relatively stable for long periods, the deutsche mark (DM) is effectively devalued. The result is a relative competitive advantage for Germany.
- It is a widely held belief that the only way German industry can lower costs and compensate for competitiveness lost due to the strong deutsche mark is to increase productivity by investing in modern equipment and streamlining production in such a way as to minimize capital costs. This belief also implies that the government must lighten tax pressure on German companies facing intensified global competition.
- Private consumption remains the only negative force acting upon Germany's growth rate, forecast at 2.5 percent for 1989, down from 3.4 percent growth in 1988.

#### **Austria**

- Domestic and international demand surged in 1988, and Austria's GDP growth rate soared to 3.9 percent, up from 1987's 1.3 percent growth.
- In an about-face, the Austrian government has decided to apply for EC membership in spring 1989. The single point of negotiation is Austria's firm obligation to retain its neutrality.
- The Austrian shilling remains closely tied to the deutsche mark, and this is regarded as the best anti-inflationary insurance.

- Another high growth rate for Austria's domestic economy is expected in 1989, as the economy is strengthened by tax reforms. Domestic and external demand will be the complementary engines of growth in the economy.

#### **Switzerland**

- Real GDP increased 2.5 percent in 1988, supported by a 3.8 percent rise in investment in plant and equipment, a 2.6 percent rise in exports, and a relatively small 2.6 percent gain in imports.
- The financial community continues to press for reform of the Stamp Act, fearing loss of business to other financial centers such as London.
- A more restrictive monetary policy is reflected in the Swiss National Bank's announcement of a 2 percent target for money supply growth in 1989.
- Growth is anticipated to continue in 1989 at a 2.5 percent rate.

## **4.3 Doing Business in the German Region**

### **BACKGROUND ON WEST GERMANY**

#### **General Considerations**

The FRG, commonly called West Germany, is one of the most prosperous countries in the world. It has a good record of economic stability, low inflation, and comparatively harmonious labor relations, all of which have helped to make it the world's largest exporter of manufactured goods.

Unemployment continues to plague West Germany's economy. Although the economic growth over the past years has also led to an increase in the total number employed, this increase accounted for a bare 0.5 percent in 1987. The estimated 70,000 new jobs that were created in 1988 will probably not be enough to stop unemployment from rising again without significant intervention. West German companies are reportedly becoming more and more pessimistic about the economic outlook; some are considering cutting back on jobs, according to the Association of German Chambers of Commerce (DIHT).

Many companies have been investing abroad to offset worsening export prospects—particularly in the dollar area. Against this gloomy backdrop, the government in Bonn has taken the initiative in the steel-producing area of the Ruhr and has agreed to find another DM 400 million to help create jobs, making the total subsidy to the industry DM 1 billion. The government also has promised to allow a toll-free harbor in Duisburg and to encourage heavier investment by government departments.

Since 1982, West German industrial production has risen only 8.3 percent. When the construction sector activity is excluded, German industrial production grew at about the same rate as the EC's total industrial production, but it was well below the OECD's total of 17 percent for this same period. Although production reached its lowest level in the 1982 recession, the only sectors to remain depressed have been mining and construction. (See Table 4.3-1.)

This industrial index provides a rough indication of the demand for different CAD/CAM application sectors in West Germany. High-production industries would be expected to have a stronger demand for industrial automation tools.

Domestic concern is being expressed over Germany's competitiveness in the global marketplace. Not only has the country's GNP growth slowed relative to the United States, Britain, and Japan, but the level of fixed-asset investment in West Germany has been below the international average.



Table 4.3-1

**Percentage Change in German  
Industrial Output (1982-1987)**

Industrial Sector	Output Percentage Change
Electrical Engineering	26.0
Chemicals	18.2
Vehicles	14.3
Electricity and Gas Supply	13.3
Textiles	4.5
Mechanical Engineering	2.2
Construction	(4.7)
Mining	(11.1)
Iron and Steel	(12.3)

Source: Bundesbank  
Dataquest  
April 1989

The Federation of German Industry has been particularly concerned about the state of both engineering and manufacturing in the country. West German engineering productivity is undoubtedly affected by the fact that West Germany has the shortest working hours in the world. The federation has estimated that a Japanese engineer works 500 hours more per year than a West German engineer. Some fear that ultimately this difference translates into loss of productivity. Government officials have realized recently that West Germany's high labor costs, the short work weeks, and some of the highest levels of corporate taxation, also affect Germany's attractiveness as a choice for a manufacturing location.

### Government Structure

The Federal Republic of Germany (FRG) is composed of 10 *laender* (states), and each has its own constitution, parliament, and government. West Berlin retains a separate status. Defense, foreign affairs, and finance apart, the states are virtually autonomous. The country has a two-house parliamentary regime. The upper house, the Bundesrat (Federal Council), has 45 seats—41 from the state governments and 4 with limited voting rights appointed by the West Berlin senate. The lower house, the Bundestag (Federal Assembly), is the country's main legislative body. It has 520 deputies, 498 of whom are elected every 4 years by a mixed system of voting and proportional representation; the remaining 22 deputies, again with limited voting rights, are nominated by the West Berlin house of representatives. The president is the constitutional head of state, but, like a king or queen in a monarchy, has little influence on government. The effective head of state is the federal chancellor, who is normally the leader of the party that is dominant in the lower house.

The main political parties in the FRG are the following:

- The Social Democratic Party of Germany (SPD)
- The Christian Democratic Union (CDU)
- The Christian Social Union of Bavaria (CSU)
- The Free Democratic Party (FDP)
- The Greens (the Ecology Party)

During Dr. Konrad Adenauer's chancellorship of 1949-1963, and with the direction of economics minister Dr. Ludwig Erhart, the Federal Republic rebuilt itself rapidly to become one of the most affluent and economically dynamic states in Europe. The CDU/CSU formed the government from 1949 through 1966—for the most part, in coalition with the FDP. Between 1966 and 1969, the country was governed by the "Grand Coalition" of the CDU/CSU and SPD. After the general election in 1969, a new coalition of SPD and FDP under the chancellorship of Willy Brandt formed the government until Mr. Brandt's replacement in 1974 by Helmut Schmidt. In 1982, Mr. Schmidt lost a vote of confidence; at that time, a new coalition of CDU/CSU/FDP was formed with Dr. Helmut Kohl as chancellor.

## GOVERNMENT POLICIES IN WEST GERMANY

### Monetary Policy

#### *Currency and Inflation*

Starting in 1950, the deutsche mark (DM) appreciated steadily against the U.S. dollar for nearly 30 years. Overall, however, the deutsche mark remains one of the most stable currencies in Europe, with the currencies of many European countries linked to its value.

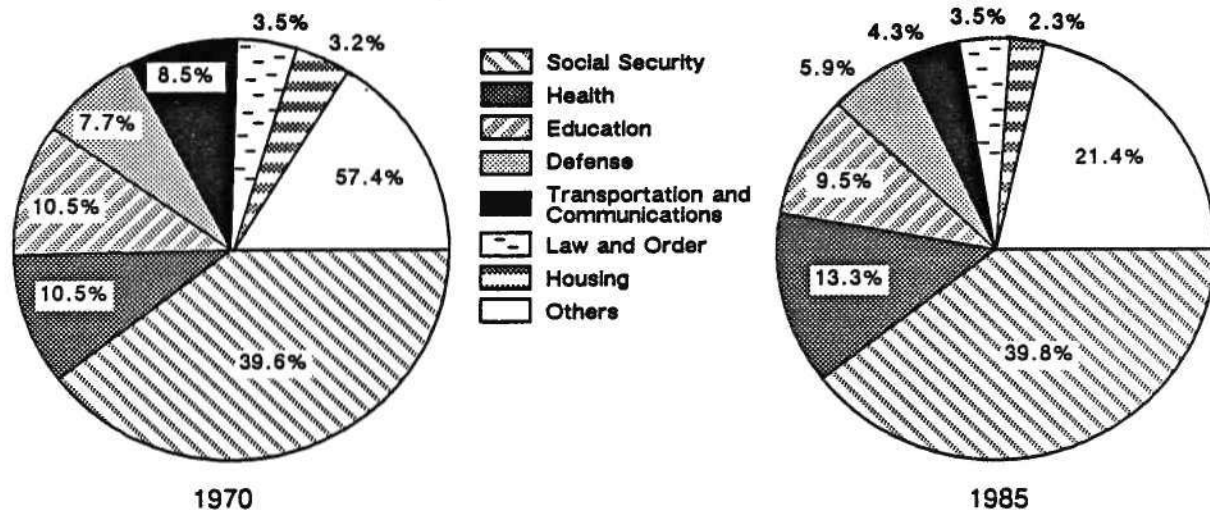
West Germany historically has exerted a tight monetary policy. Having experienced hyperinflation in the past, the German government continues to pursue its cautious monetary policies in order to avoid inflation.

#### *Public Sector and Public Debt*

As in much of Western Europe, the public sector has grown markedly in the Federal Republic of Germany. Figure 4.3-1 shows how the West German government apportions its expenditures. The "Health" category includes the country's high expenses for energy and environmental protection.

Figure 4.3-1

## West Germany Government Expenditures by Category



0003588-1

Source: Dataquest  
April 1989

As in other European countries, public debt has increased also. In 1973, public debt was 17 percent of GNP; in 1987, public debt rose to 45 percent of GNP. At the end of 1986, West German public debt exceeded DM 800 billion. This debt is not expected to be corrected any time soon. In fact, further budget deficits have been encouraged in order to increase domestic demand in the country. The United States has encouraged this situation because of the falling dollar and the trade imbalance with West Germany.

Foreign creditors continue to play a major role in financing Germany's public debt. For instance, of the DM 41 billion increase in the 1986 public debt, 85 percent was funded by foreign creditors.

*Privatization*

In contrast to countries like France and Italy, government ownership is on a much smaller scale in West Germany. Most of the government holdings sold since 1983 (some 50 companies) realized less than DM 1 billion. The largest remaining holdings are 16 percent of Volkswagen and 80 percent of Lufthansa. Both companies were offered for sale in 1987, but various political reasons have delayed the sales.

**Trade Policy**

Trade has become one of the cornerstones of the West German economy: Export trade accounted for more than 30 percent of the 1986 GNP, compared with less than 7 percent for the United States. Despite the slowing of world economic growth, West Germany recorded a trade surplus of well over DM 100 billion in 1986.

The greater share of the country's exports (53 percent) go to other EC countries, with the lion's share to France. However, the United States is West Germany's second largest trading partner.

### **Intellectual Property Protection**

#### *Patents and Trademarks*

To protect their industrial property rights, exporters should obtain professional advice about protection for patents, designs, and trademarks in any country where they have a market. If patent coverage is required in more than three countries, it is more cost-effective to apply under the European Patent Convention of 1978, designating each country on one application.

The Federal Republic of Germany, like most other major trading countries, subscribes to the International Convention for the Protection of Industrial Property. Within six months of registering a patent application, an exporting company may test the market in a convention country and decide for itself whether any protection is necessary. Disclosure of an invention or design during this period does not jeopardize the application for a patent. Advice on any of these matters can be gained from agents specializing in patents, designs, and trademarks. Names and addresses of these agents will be supplied for a small fee by the Chartered Institute of Patents.

### **INVESTMENT CONSIDERATIONS IN WEST GERMANY**

#### **Direct Foreign Investment**

Financial investment from foreign sources is permitted in West Germany; for current advice, the overseas branch of any bank should be consulted. Under the Treaty of Rome, any European Economic Community (EEC) national can set up a business in the countries of the community, provided that the laws applying to the relevant sector in that country are observed. However, certain industries are subject to control in order to safeguard health and to restrict unqualified persons. Proof of professional qualification or, in some cases, proof-of-experience certificates are generally required. These can be obtained from the Department of Trade and Industry.

#### **Investment Incentives**

Incentives are available to businesses wishing to set up a factory or office in many areas of West Germany. The individual states all have separate business development agencies run by businessmen, to whom inquiries should be directed. Further information is available from the local chambers of commerce and banks in each state.

## OTHER BUSINESS CONSIDERATIONS IN WEST GERMANY

### Company Law

The foreign investor will normally have to choose between two types of company setup in Germany:

- Partnership (OHG, KG, or GmbH & Co.KG)
- Corporate (GmbH or AG)

The main differences among these company types are in taxation principles.

#### *OHG (Offene Handelsgesellschaft)*

This is a general partnership in which all partners are jointly and severally liable for all liabilities of the partnership.

#### *KG (Kommanditgesellschaft)*

This is a limited partnership. The limited partners are liable for only their own contribution. There must be at least one general partner.

#### *GmbH & Co.KG*

This is a limited partnership in which only the general partner is a limited liability company. It is widely used in Germany because it combines the advantageous taxation of individuals with limited liability. The tax advantage is less for nonresident partners, but it can still sometimes be a worthwhile consideration.

#### *GmbH (Gesellschaft mit beschränkter Haftung)*

This form of company can be set up in one to six weeks, and the shareholders are liable for only their capital contribution. Its shares are not physically represented by a piece of paper; they are merely rights against the other shareholders, transferred by notarial deed. Minimum capital requirement at present is DM 20,000, but the requirement is expected to be raised to DM 50,000.

#### *AG (Aktiengesellschaft)*

This style of company requires at least five founders, with a minimum capital requirement of DM 100,000. Some businesses insurance, for example, can be conducted only by an AG; however, in many cases, this company form will be chosen mainly for its prestigious status. Foreign investors rarely choose it.

## **Taxation**

### *Corporation Tax*

West German companies are subject to corporation tax at the rate of 56 percent on predividend profits and 36 percent on post-dividend profits. For branches of foreign-based corporate entities, the rate is a flat 50 percent.

### *Trade Income Tax*

Gross trade income tax varies between 14.0 and 22.5 percent, depending on where the business is based.

### *Value-Added Tax*

Value-added tax (VAT) is charged at 14.0 percent and 6.5 percent, excluding some kinds of transactions altogether—mainly those connected with sales and services outside the EEC, lease and rental proceeds, and insurance or bank transactions.

### *Capital Investment Tax*

Capital investment tax is levied whenever capital is introduced into a company or when the value of shares is increased.

## **BACKGROUND ON AUSTRIA**

### **General Considerations**

Following the signing of the State Treaty of Vienna in May 1955, Austria became truly independent, especially after the passing of the constitutional law on the country's permanent neutrality in October 1955. The permanent neutrality and the guarantee of human rights have given Austria much international respect. This respectability has lost credibility recently, however, as a result of allegations that Austria's president, Kurt Waldheim, had been involved in war crimes under the Third Reich.

### *Government Structure*

Austria is a democratic republic established as a federal government consisting of nine laender (states). The country is headed by a president (bundespräsident) who is elected directly by the people. The legislative and executive powers are divided between the laender and the bund (federation). Each state has its individual democratic institutions—the landtag (elected by the people) and the landesregierung (elected by the landtag). Whereas the bund is entitled to legislate, the laender are responsible for the

implementation of such legislation. This legislative power of the bund is exercised by the nationalrat (National Council) jointly with the bundesrat (federal council). The nationalrat consists of 183 members who are elected every four years. The bundesrat, representing the states, elects a total of 58 members. The government consists of the chancellor, who is chosen by the president; the vice chancellor; and the ministers.

The main political parties in Austria are the following:

- Österreichische Volkspartei (OVP)—(Austrian People's Party)
- Sozialistische Partei Österreichs (SPO)—(Socialist Party of Austria)
- Freiheitliche Partei Österreichs (FPÖ)—(Freedom Party of Austria)
- Vereinigte Grüne Österreichs (VGO)—(Green Party of Austria)
- National Demokratische Partei (NDP)—(National Democratic Party)
- Kommunistische Partei Österreichs (KPO)—(Communist Party of Austria)

#### *Relationship to Major International Agencies*

Austria is an active member of the United Nations, and, because of its position at the center of Europe, it has become a link between the East and West. There can be found the headquarters of several international institutions, such as the International Atomic Energy Agency (IAEA), the United Nations Industrial Development Organization (UNIDO), and the Organization of Petroleum Exporting Countries (OPEC). Moreover, Austria is a member of the General Agreement on Tariffs and Trade (GATT), the Organization for Economic Cooperation and Development (OECD), and the European Free Trade Association (EFTA). It is linked to the EC by a free-trade agreement.

#### **Industrial Structure**

Austria's industry consists mainly of small to medium-size companies. As per 1987 data, the total number of industrial and trading concerns was about 230,000, of which 97 percent employed less than 50 people. Only 140 private companies employed more than 1,000 people. The nationalized industries employed 115,000 people.

The computer market in Austria continues to expand rapidly. Hardware turnover exceeds \$ 10 billion a year with an installed base of approximately 450,000 computers as of 1988. More than 300 companies are involved in the software sector—both domestic and foreign companies being represented—with annual turnover estimated near \$ 9 billion. Computer-aided design, computer-aided manufacture, and computer-integrated manufacture (CAD/CAM and CIM) are areas of increasing importance.

## **Economic Development**

Over the past two decades, Austria's economic base has been transformed from an agricultural to a modern industrial one. The world economic setbacks and cycles have not affected the Austrian economy to the same extent as other European nations. During the 1970s, inflation rates ran about 2.5 percent below the OECD average while economic growth was about 1 percent above. This resulted from the combination of monetary and income policies with a strict currency exchange. Labor relations and the strike record continue to be enviable.

Nevertheless, after an unprecedented period of prosperity lasting some 15 years, the economy is now at a turning point. The country has enjoyed a higher rate of growth, lower inflation, and lower unemployment than most other Western countries in the 1970s and 1980s; however, over the past few years, it has become apparent that the comprehensive welfare system, the high cost of wages, and a large and inefficient state industrial sector have become prohibitive. (Austria has probably the highest state control level in Western Europe. The public sector contains all forms of energy, telecommunications, coal, steel, railways, and three banks.)

Mainly due to industrial rationalization programs, the unemployment rate is starting to edge up. Moreover, the country's exports have been adversely affected by the weaker dollar as well as the slump in the market demand in OPEC countries and Eastern Europe.

The growth of real GDP declined from an annual rate of 6 percent between 1968 and 1973, to 3 percent between 1973 and 1979, and to 1.75 percent between 1979 and 1986, falling finally to 1 percent 1987 and 1988. This rate is expected to continue in 1989. The budget deficit has increased to about 5 percent of GDP over the last few years. As a result, debt repayments have been rising by leaps and bounds, from only S 9 billion in 1973. The total debt/GDP ratio has more than quadrupled during the same period, to 43 percent. According to those projections, the federal budget deficit would increase progressively from 5 to 9 percent of GDP by 1992, and the debt/GDP ratio would grow to 70 percent.

## **GOVERNMENT POLICIES IN AUSTRIA**

### **Monetary Policy**

The Austrian government has acknowledged the need for fiscal restraint. The aim is to reduce the federal budget deficit from 5 percent of GDP to 2.5 percent by 1992. The government has decided to bring down the budget deficit by cutting the public-sector spending rather than by increasing taxation; however, the taxation will be restructured. The highest income tax brackets will be reduced from 62 percent to 50 percent, and the



lowest will be reduced from 21 percent to 10 percent. To cover the 10 percent difference, tobacco has been taxed by a further 5 percent and the tax on gambling increased by a further 10 percent. The tax on interest earned on bonds and savings will be 10 percent. This new tax reform, to be implemented in 1989, will be the first overhaul of the tax system since World War II.

Measures to decrease the budget deficit include:

- Reduction in recruitment for the civil service
- Delays in the wage round for government employees
- Postponement of the adjustment of pensions (Last year, the government contribution to total pension benefits exceeded 30 percent.)
- Introduction of fees for some social services
- Reduction or abolition of certain family allowances
- No increases in farm subsidies

Voest Alpine has announced a restructuring program that will result in eliminating 9,500 jobs by 1990. Also, there is talk of privatization of several of the nationalized industries. The aim of these drastic measures is to put Austria back on a strong growth path in the next decade.

#### Trade Policies

The Austrian economy has strong ties to the Federal Republic of Germany (FRG). Austria's leading trade partner, the FRG receives approximately 40 percent of all Austrian exports. Moreover, the Austrian schilling is linked with the West German deutsche mark. More than 63 percent of all Austrian exports went to EEC countries in 1987, while 68 percent of imports came from the EEC. At the same time, Austria's exports to the East European countries and the OPEC nations have been decreasing. This situation results partly from the agreement that was signed in 1972 between the EEC and the EFTA. The agreement is due to change in 1992, however, when the EEC's internal market will come into existence. Unless steps are taken to associate fully with the EEC's internal market, a loss of 1.5 percent of Austria's market share in the EEC is feared. At this stage, the Austrian government has left open the option of an application for full community membership in case efforts to take part in the internal market are not successful.

#### Intellectual Property Protection

Manufacturers and traders are strongly recommended to patent their inventions in Austria and to register their trademarks. Applications should be made through a patent or trademark agent—either in the country of residence or in Austria. Austria subscribes to the International Convention for the Protection of Industrial Property.

### *Patents*

Patents are granted for a period of 18 years from the date of publication of the application, subject to annual renewal fees. If the patented invention is not worked to a prerequisite degree within three years of the date of when the patent is granted, then the patentee may be ordered to grant licenses.

### *Trademarks*

Trademarks can be registered for goods and services. The first applicant is entitled to registration and exclusive use of a trademark for 10 years. Then the trademark may be renewed for similar periods not earlier than 1 year before, or later than 6 months after, the expiration date. If a prior user wishes to apply for cancellation of a trademark, this must be done within three years of the initial registration.

## **INVESTMENT CONSIDERATIONS IN AUSTRIA**

### **Direct Foreign Investment**

Austria has one of the lowest unemployment rates and one of the lowest strike rates in Europe. These two points, plus the experience Austria has to offer in trading links with Eastern Europe, make the country a favorable target for overseas investors. The Austrian government recognizes this by treating both Austrian and foreign investors in the same manner, apart from a few formalities. These differences include the following:

- A non-Austrian citizen may establish businesses if there are intergovernmental agreements in operation to allow for it or if an Austrian enterprise is not subject to any unfavorable constraints in operation of a business in the expatriate's own country.
- The foreign investor who is not from a member state of the European Free Trade Association (EFTA) will require an operating permit issued by the relevant provincial governor.
- A non-Austrian citizen wishing to purchase property must obtain a permit to do so, and a foreign investor who is not resident in Austria must appoint a representative who is. However, this is the extent of Austrian involvement in the running of an overseas-owned company as required by law.
- A nonresident wishing to buy into an already established Austrian venture must apply to the National Bank for a permit to import capital.
  - If the proposal will enhance business in a development area, contribute jobs, or aid technology and research, it is unlikely to be refused.
  - If it appears that the foreigner is applying for control over an Austrian business, however, the application is less likely to succeed.

#### **Investment Incentives**

Incentives for investments are operated at the federal, provincial, and local levels. They are used to control economic expansion, to provide employment, and to develop areas in need of assistance (usually the more rural districts). Applications are usually made through the investor's bankers. All loan schemes are subject to change, depending on economic circumstances, and potential investors are encouraged to contact one of the Austrian banks for the latest details.

Among the many investment incentive schemes covering a wide range of activities, the major ones are highlighted in the following paragraphs.

#### *Industrial Site Development*

For development of industrial sites, the Oesterreichische Kommunal Kredit AG will grant loans for up to 15 years at 7.5 percent interest. The applicant is expected to provide one-third of the total funds required.

#### *Product Sector Growth*

Loans are granted to increase investment in specific product sectors such as for microelectronics projects or CAD/CAM ventures. CAD/CAM ventures can be allocated up to S 10 million over 8 years at 5 percent interest. In this case, the applicant should provide 25 percent of the total costs.

#### *Plant, Machinery, and Buildings*

Funds are available from the European Relief Plan (ERP Credits), at 5 percent interest over 5 years for plant and machinery. Loans for buildings are extended for 10 years.

#### **CAD/CAM**

Austria has no special development agency for CAD/CAM. However, it is possible to get government support for special research projects that can involve CAD/CAM. It is also possible to get a loan from the Oesterreichische Invest-Kredit Bank for investments in CAD/CAM (maximum 75 percent of the total investment) with very low interest rates (4 percent).

In cases where CAD/CAM is part of a CIM project, such as investments, to improve production facilities (NC machines, shop floor management systems), it is possible to receive a government grant called "Microelectronic Promotion."

## OTHER BUSINESS CONSIDERATIONS IN AUSTRIA

### Company Law

Any newly formed business must notify the Commercial Registry of its establishment and deposit its constitutional documents with the registry. Any subsidiary company must produce evidence of the existence and viability of a parent. The Registry is open to the public, and it is located at the commercial court.

Following the German pattern of establishment, Austrian legislation provides for the following forms of organization:

- GmbH (Gesellschaft mit beschränkter Haftung)—Limited company (The minimum capital required is S 500,000.)
- AG (Aktiengesellschaft)—Stock corporation (The minimum capital required is S 1,000,000.)
- Genossenschaften—Cooperatives/partnerships
- GmbH & Co.KG—Limited partnership, with a limited company or corporation as general partner
- OHG (Offene Handelsgesellschaft)—General partnership
- KG (Kommanditgesellschaft)—Limited partnership
- Silent partnership
- Partnership under civil law

Experience shows that the GmbH, AG, and GmbH & Co.KG forms are preferred by foreign investors, mainly for tax reasons.

### Taxation

The Austrian tax system is based on the German tax reforms of the 1920s, which became law in Austria in 1938, although there have been some amendments.

#### *Main Direct Taxes*

*Income Tax.* Every individual is taxed separately on income; there is no joint taxation of married couples. Nonresidents are subject only to taxation on certain income within Austria, and can claim only expenses directly related to that income.

**Wage Tax.** This is a special kind of income tax, payable at source and deducted by the employer. It carries certain benefits in that "additional payments," such as thirteenth and fourteenth monthly salaries (salaries paid in advance), can be tax free.

**Capital-Yields Tax.** This is a tax on profit shares and on interest from shares, bonds, and receipts from any business enterprise earned as a silent partner.

**Corporation Tax.** Corporation tax is levied on the profits of legal entities, including permanent establishments of foreign companies in Austria. It is determined by means of a sliding scale from 30 percent for profits up to S 200,000, to 55 percent of profits more than S 1,140,000. This tax applies to postdividend profits.

**Commercial Tax.** Trading profits, trade capital, and total wages are subject to assessment for this tax, which can amount to 15 percent of trading profit and 1.5 percent of working capital.

**Property Tax.** This tax is levied on individuals and on legal entities. It is less important than the other taxes, and is levied at a rate of 1 percent of total taxable net assets.

#### *Main Indirect Taxes*

**Value-Added Tax (VAT).** The VAT was introduced in Austria in 1973. It is levied on the amount invoiced by any person carrying out an independent business activity for goods and services rendered and levied on imported goods, as is the import turnover tax, whether customs duties are payable or not. However, if duty is paid, VAT is calculated on the duty-paid value. The exact amount depends upon the goods in question, but the general rate is 20 percent. The VAT is levied on imports at 0.3 percent of the carriage/insurance/freight (c.i.f.) value at customs clearance points.

**Property Transfer Tax.** Transfers of property or real estate are taxed at 8 percent, except when transferred in exchange for shares. Then the tax rate is 6 percent.

**Stamp Duty.** This tax is levied on legal documents at several rates up to 2 percent.

**Special Interest Tax.** A rate of 5 percent of interest yield is levied on bank deposits and securities issued in Austrian currency.

#### **Business Development Agencies**

Austria has no special development agency for CAD/CAM. However, it is possible to get government support for special research projects that can involve CAD/CAM. It is also possible to get a loan with very low interest rates (4 percent) from the Oesterreichische Invest-Kredit Bank for investment in CAD/CAM (maximum 75 percent of the total investment).

In cases where CAD/CAM is part of a CIM project—i.e., investments to improve production facilities (NC-machines, shop-floor management systems)—it is possible to receive a government grant referred to as “Microelectronic Promotion.”

## BACKGROUND ON SWITZERLAND

### General Considerations

Switzerland is often thought of as being divided into three main regions: the German-speaking, French-speaking, and Italian-speaking regions. The two main parts of Switzerland are the French, or Romande, region and the German-speaking region. The German-speaking region boasts the largest banks and corporations and contains 74 percent of the population. The French-speaking region identifies with neighboring France, as very few Swiss French speak German. This region contains 20 percent of the Swiss population, and the Italian-speaking region has 6 percent.

The Swiss trademarks of efficiency, conservatism, and a service-based business approach have been the forces behind Switzerland's becoming a major world financial power. The health and soundness of the Swiss economy have given its inhabitants one of the highest standards of living in the world and the highest in Europe. The majority of people are employed in the service sector, which is mainly composed of the banking and hotel trade. Industry provides close to 40 percent of all jobs.

Switzerland's major “industry” is services, and the dominant service sector in Switzerland is primarily made up of the banking and tourism trades. The diversity between regions and the service mentality of the Swiss have made Switzerland Europe's first tourist area. Switzerland was the birthplace of the hotel industry. The banking confidentiality that has earned Switzerland the reputation of the banking capital of the world is based on a penal system for bank employees who disclose information about clients. Magistrates have no power to demand information about bank clients, unless the information concerns a criminal offense. Furthermore, tax evasion is not a crime in Switzerland. Only recently, with growing international competition and a further integration of Swiss banks into international markets, have these laws experienced some revision.

Two of the major industries in Switzerland are chemicals and pharmaceuticals. The largest, pharmaceuticals, has become the third largest in the world by concentrating on a sophisticated product line. Such companies as Ciba-Geigy and Brown Boveri are mainly large international concerns, dependent on export markets. Smaller industries in Switzerland include the luxury watchmaking industry, which has a worldwide reputation, and the textile industry. Although both are very much dependent on export markets, they have, in the long run, proved to be the most resilient industries in the country.

Given the geographic layout of the country, agriculture in Switzerland plays a minor role in the overall economy. Recently, this sector has been characterized by a decreasing number of people employed; however the decrease in workers has been offset by increased efficiency. Swiss agricultural output, which lacks diversity, creates yearly surpluses that must be disposed of at a cost to Swiss taxpayers.

### GOVERNMENT POLICIES IN SWITZERLAND

#### Financial Affairs and Politics

Switzerland's desire to stay on the leading edge of technology and to keep up with the international financial and industrial world has led the country to make adjustments in its financial affairs in order to remain adaptable to the internationalization of financial markets. Conversely, strong environmentalist concerns have surfaced regarding the negative effects and social limits to growth. Growth and change come slowly to neutral Switzerland, a country with a high respect for the status quo and a long decision-making process in which public debate is encouraged.

#### Intellectual Property Protection

Switzerland subscribes to the International Convention for the Protection of Industrial Property and the European Patent Convention (EPC). It is advised that manufacturers and traders patent their inventions and register their trademarks in Switzerland. Applications should be made through the relevant agents in either Switzerland or the country of residence.

##### *Patents*

Patents are granted for a period of 20 years from the date of application on payment of an annual renewal fee. An invention covered by a patent should be worked within three years of the grant; otherwise, an order to grant licenses may be issued. Prior to convention, the product must not have become known in Switzerland or been published anywhere. Once a patent is granted in Switzerland, it is also valid for Liechtenstein.

##### *Trademarks*

The first user of a trademark is entitled to registration and exclusive use of it. Registration lasts for 20 years and may be renewed for similar periods, provided application is made not later than 6 months after expiration. Failure to make use of a trademark for three consecutive years may lead to its cancellation.

The address of the Swiss office for both patents and trademarks is Bundesamt für geistiges Eigentum, Einsteinstrasse 2, CH-3003 Berne, Switzerland.

## **INVESTMENT CONSIDERATIONS IN SWITZERLAND**

### **Direct Foreign Investment**

The right to freedom of trade and industry is part of the Swiss constitution. It permits foreigners to trade, establish a company, or open a branch office in Switzerland. Foreign-owned enterprises are allowed the same legal status as Swiss-owned ones. However, special authorization is required for direct foreign investment in the following sectors: banking, insurance, investments, restaurants, hotels, medicine, law, and pharmacology. The purchase of property is restricted for foreigners also; permission has to be obtained from the cantonal authorities.

When contemplating setting up a business in Switzerland, one must remember that Switzerland applies strict rules on the admission of foreign employees. Furthermore, due to the extremely low unemployment rate, it is very difficult to find specialist workers in Switzerland itself.

Further information on government policies toward foreign investments can be obtained from the Federal Office for Industry, Trade, and Labor and the Swiss Office for the Development of Trade.

### **Investment Incentives**

The two main areas for which the Swiss government offers investment incentives are the following:

- The rural cantons
- The declining industries

In order to attract the establishment of new factories in the rural cantons, which are less developed, land is offered rent-free for a stipulated period. In these areas, public land can be made available at a concessionary rate.

The steel, textile, and watch industries are declining. To attract foreign companies to invest in these declining industries, land, finance, and tax incentives are available. For example, the government provides guarantees for investment credits and contributions to investment credit interest.



## OTHER BUSINESS CONSIDERATIONS IN SWITZERLAND

### Company Law

The investor can choose from the following three different types of company setups in Switzerland:

- AG (Aktiengesellschaft) or SA (Societe Anonyme)—This style of company is a joint stock company with not more than one founding member. It has a minimum capital requirement of SFr 50,000 and a minimum par value per share requirement of SFr 100. A majority of the directors have to be of Swiss nationality and reside in Switzerland.
- GmbH (Gesellschaft mit beschränkter Haftung) or SARL (Societe a responsabilité limitée)—This type of company is equivalent to a private limited company. The minimum capital requirement for a GmbH is SFr 20,000, with SFr 10,000 to be paid at the time of incorporation.
- Branch office—A branch office is advisable only for companies with a fairly small volume of business. A branch office has certain disadvantages; it can be taxed proportionally to the sales revenue of the parent company. Also, the person running the branch office has to be resident in Switzerland, although not necessarily of Swiss nationality.

### Taxation

#### *The Swiss Tax System*

The tax system in Switzerland is very complex because taxes are levied at all three levels of government and income and capital taxes are calculated at progressive rates. In all cases, minimum and maximum rates are set.

The federal government is entitled to levy turnover tax, stamp duties, and direct federal tax. The most important taxes the cantons levy are income and assets taxes and capital taxes. The taxes that the political communities can levy fall within a narrow range and are mainly a supplement to cantonal taxes.

Details of tax incentives for potential investors can be obtained from the Federal Administration of Contributions.

#### *Federal Turnover Tax*

The Federal Turnover Tax (Warenumsatzsteuer—WUST), which was introduced in 1941, is levied on the domestic turnover (revenue) and importation of most goods. Services are excluded from this tax. It is normally payable only once during the process of manufacturing and selling any product, and both manufacturers and wholesalers are liable for Federal Turnover Tax. The rates are 9.3 percent on the income from sales to the retail trade and 6.2 percent on the income from sales to other customers.

## BUSINESS INFORMATION SOURCES

## West Germany

Business information sources for West Germany are listed in Table 4.3-2.

Table 4.3-2

## Business Information Sources—West Germany

Source	Address
Federation of Industry	Bundesverband der Deutschen Industrie Gustav-Heinemann-Ufer 84-88 5000 Cologne 51 Deutschland
B.O.T.B	FOCUS GERMANY B.O.T.B 1 Victoria Street London SW1H 0ET
Financial Times	Daily Editions January-March 1988 London
Statistics Office	Statistisches Bundesamt Gustav-Stresemann Ring 11 D6200 Wiesbaden Deutschland
British Embassy	Mr. Eric Jenkinson Bonn Tel: 010-49-228-234061 x 283
German Embassy	23 Belgrave Square London SW1 Tel: 01-235-5033
VDI	Verein Deutscher Ingenieure Bezirksverein Frankfurt-Darmstadt 71 Flughafenstrasse 100 Frankfurt

Source	Edition
IMF World Economic Outlook	October 1987
OECD Economic Outlook	December 1987
Eurostatistics	January 1988
European Economy	November 1987
IMF International Financial Statistics	January 1988
Prudential-Bache International Research	February 1988

Source: Dataquest  
April 1989

### Austria

Business information sources for Austria are listed in Table 4.3-3.

**Table 4.3-3**

#### **Business Information Sources—Austria**

<b>Source</b>	<b>Address</b>
Austrian Trade Commission	Mr G.Stock 11 Hyde Park Gate London SW7 5ER Tel: 011-44-01-584-4411
Girozentrale u.Bank der Oesterreichischen Sparkassen AG	Walter Waschiczek Schubertring 5 A-1010 Wien Vienna
Oesterreiches Statistisches Zentralamt	Ms. M. Doerfler Hintere Zollamtstrasse 2b 1033 Wien Postfach 9000 Vienna Tel: 011-43-222-6628 Tlx: 132600
B.O.T.B Austria Desk	EEB Department of Trade and Industry 1-19 Victoria Street London SW1H 0ET Tel: 01-44-01-215-4798
Financial Times British Embassy, Austria	London Editions January-April 1988 Tel: 010-43-1-731575

<b>Source</b>	<b>Edition</b>
IFS	January 1988
OECD Economic Outlook	December 1987
Eurostat Eurostatistics	January 1988
European Economy	November 1987
IMF World Economic Outlook	October 1987

Source: Dataquest  
April 1989

## Switzerland

No business information source data are available for Switzerland.

## BUSINESS DEVELOPMENT AND REGULATORY AGENCIES

### West Germany

Business development and regulatory agencies for West Germany are listed in Table 4.3-4.

Table 4.3-4

#### Business Development and Regulatory Agencies—West Germany

Agency	Address	Type of Information
British Chamber of Commerce	BCCG Secretariat Heumarkt 14 D-5000 Cologne 1 Deutschland	Corporate tax incentive
Chartered Institute of Patents	Staple Inn Buildings High Holborn London WC1V 7PZ United Kingdom Tel: 011-44-1-405-9450	Patents, designs, and trademarks
The Department of Industry	European Policy Division 1 Victoria Street London SW1H 0ET United Kingdom  Tel: 011-44-1-215-5354	EEC investment trade and incentives
Ausstellungs- und Messeausschuss der Deutschen Wirtschaft	Lindenstrasse D-4000 Cologne Deutschland	German CAD/CAM trade fairs

Source: Dataquest  
April 1989

**Switzerland**

Business development and regulatory agencies for Switzerland are listed in Table 4.3-5.

**Table 4.3-5**  
**Business Development and Regulatory Agencies—Switzerland**

<b>Agency</b>	<b>Address</b>	<b>Type of Information</b>
Federal Office for Industry, Trade and Labor	Bundesgasse 8 CH-3000 Berne Switzerland Tel: 011-41-31-612 111	Foreign investment policies
Swiss Office for the Development of Trade	Rue Bellefontaine 18 CH-1003 Lausanne Switzerland Tel: 011-41-21-20 32 31	Foreign investment policies
Federal Administration of Contributions	Eigerstrasse 65 CH-3003 Berne Switzerland Tel: 011-41-31-61 71 96	Tax incentives
Swiss Standards Institute	Schwizerischer Elektrotechnischer Verein Seefeldstrasse 301 CH-8008 Zurich Switzerland Tel: 011-41-1-384-9111	Standards
Swiss Patent Office	Bundesamt fur geistiges Eigentum Einsteinstrasse 2 CH-3003 Berne Switzerland	Patents and trademarks

Source: Dataquest  
April 1989

## STANDARDS ORGANIZATIONS

### West Germany

In the United Kingdom, only one organization, the British Standards Institute, publishes national standards. In West Germany, a number of organizations create and publish standards. The German Association of Electrical Engineers (VDE) is responsible for electrical standards. The Institute of Mechanical Engineers (VDI) publishes mechanical standards, and so on. Once accepted, all these standards are incorporated into the catalog of the Deutsche Industrie Normen (DIN), or German Industrial Standards.

Products can be tested for compliance with the requisite standards by most of the bodies producing standards. An inspection of the manufacturer's production methods is usually necessary, followed by tests on samples and further periodic surveillance. Once any particular product has been passed, the manufacturer is entitled to apply the relevant mark to each item produced.

West Germany has no laws stating that technical equipment must be tested and certified. Professional expertise is well respected, however, and the opinion of a recognized expert is highly prized.

### Austria

If a company's goods meet German standards, Austrian specifications are unlikely to be a problem. Exporters of chemical and pharmaceutical goods must, however, be prepared for long testing periods prior to approval of any innovation.

### Switzerland

Information on standards in Switzerland may be obtained from the Swiss Standards Institution.

## CAD/CAM PUBLICATIONS

### West Germany

Table 4.3-6 lists some CAD/CAM publications and the addresses of their publishers.

**Table 4.3-6**

**CAD/CAM Publications—West Germany**

<b>Publication</b>	<b>Address</b>
Computer Graphik Markt CAD-CAM Report	Dressler Verlag GmbH Heidelberg Hauptstrasse 29 6900 Heidelberg Deutschland Tel: 011-49-6221-160081
MEGA	Guenther Klascher (Editor) Franzis-Verlag Postfach 37 02 80 8000 Munich 37 Deutschland
Computerwoche	Dieter Eckbauer (Editor) Postfach 400 429 Rheinstrasse 28 8000 Munich 40 Tel: 010-49-89-360860
Markt & Technik PC-Magazin	Eduard Heilmayr (Managing Editor) Markt & Technik Verlag AG Hans-Pinsel-Strasse 2 8013 Haar nr Munich Tel: 011-49-89-46130

Source: Dataquest  
April 1989

#### **Austria**

Austria has no magazines specializing in CAD/CAM topics; however, some industry magazines contain CAD/CAM sections. Also, Austrian businesspeople read the German trade and technical press in addition to their own. The most popular Austrian magazines that contain CAD/CAM sections are:

- Technik Report
- Dispo
- Tech-Markt
- COM

- Output
- A3 Volt

Information on other trade and technical publications available may be obtained from the Landesinnung Wien des Wirtschaftlichen Werbewesens. (See the "Business Development and Regulatory Agencies" section of this chapter.)

### Switzerland

Swiss CAD/CAM publications, along with the addresses of their publishers, are listed in Table 4.3-7.

Table 4.3-7

#### CAD/CAM Publications—Switzerland

Publication	Address
Polyscope Computer & Elektronik	Verlag Binkert AG CH-4335 Laufenburg Switzerland
Micro- und Kleincomputer	Informa Verlag AG Postfach 1401 CH-6000 Lucerne 15 Switzerland
Elektronika	AT-Fachschriftenverlag Bahnhofstrasse 39-43 CH-5001 Aarau Switzerland
Output	Hans Wittwer, Chief Editor Seeblick CH-9327 Tubach
Technische Rundschau	Hallwag AG Nordring 4 Postfach 2665 CH-3001 Berne Switzerland Tel: 010-41-31-423 131

Source: Dataquest  
April 1989



Other magazines not dedicated to CAD/CAM topics but including a CAD/CAM section are the following:

- Der Elektroniker
- Elektro-Revue
- Sysdata
- Bau & Architektur
- Computerworld
- Bilanz
- Industrie e Technique
- CAD/CAM Report

## TRADE FAIRS

### West Germany

The three major CAD/CAM trade fairs in West Germany are shown in Table 4.3-8.

Further details of German trade fairs are published by the Ausstellungs-und Messeausschuss der Deutschen Wirtschaft. (The address is listed under "Business Development and Regulatory Agencies" in this section.)

**Table 4.3-8**

**Major CAD/CAM Trade Fairs—West Germany**

Name	Time of Year	Location
CeBit	March	Hannover
CAT	May/June	Stuttgart
Systec	October	Munich

Source: Dataquest  
July 1988

### **Austria**

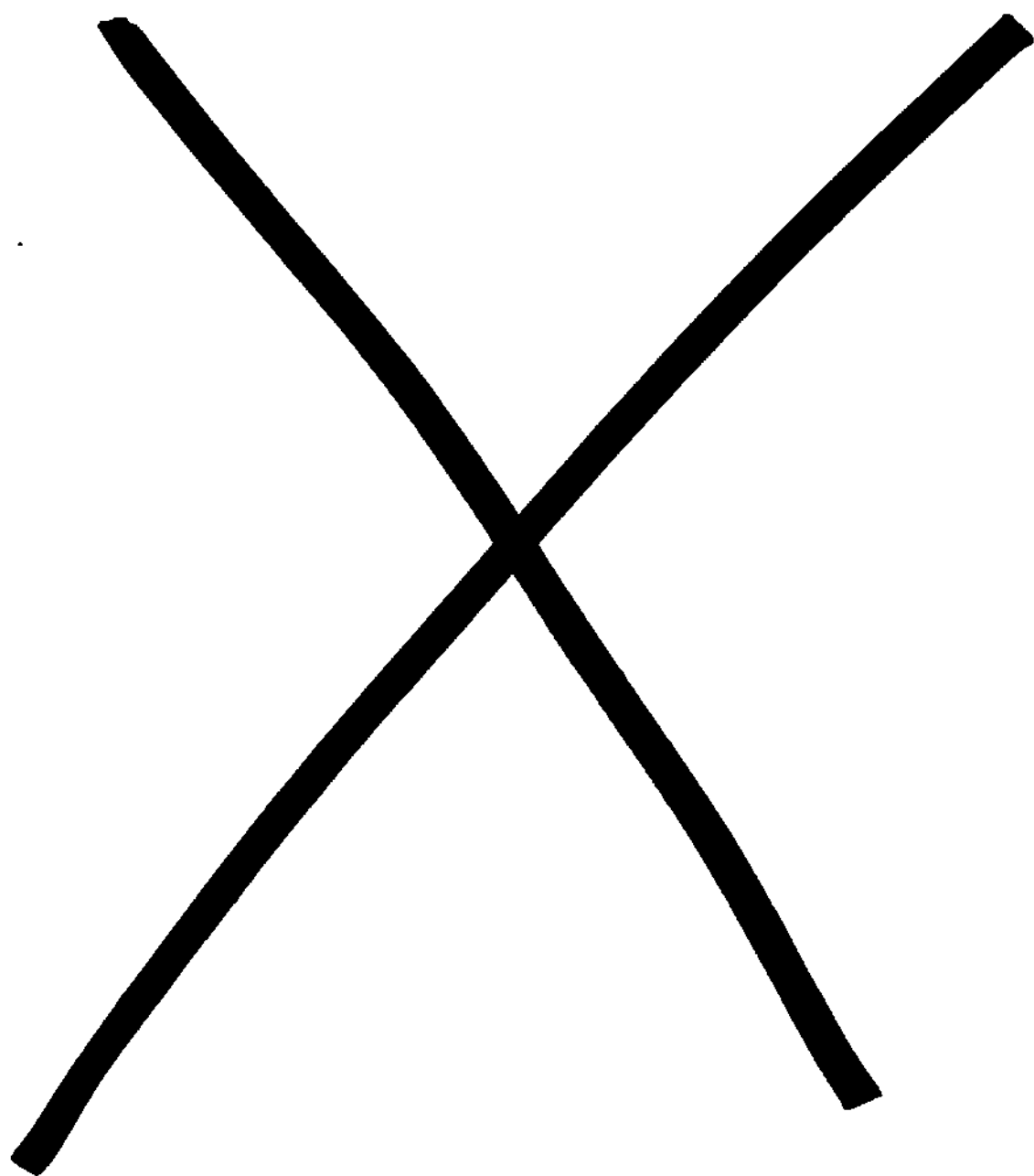
Trade fairs are of particular importance in establishing business contacts, and participation in a trade fair should always be part of any integrated marketing plan. The following Austrian trade fairs are of special interest for foreign exhibitors:

- Vienna International Spring Fair  
Wiener Messe AG  
Vienna
- Autumn Fair  
Messeplatz 1  
Vienna

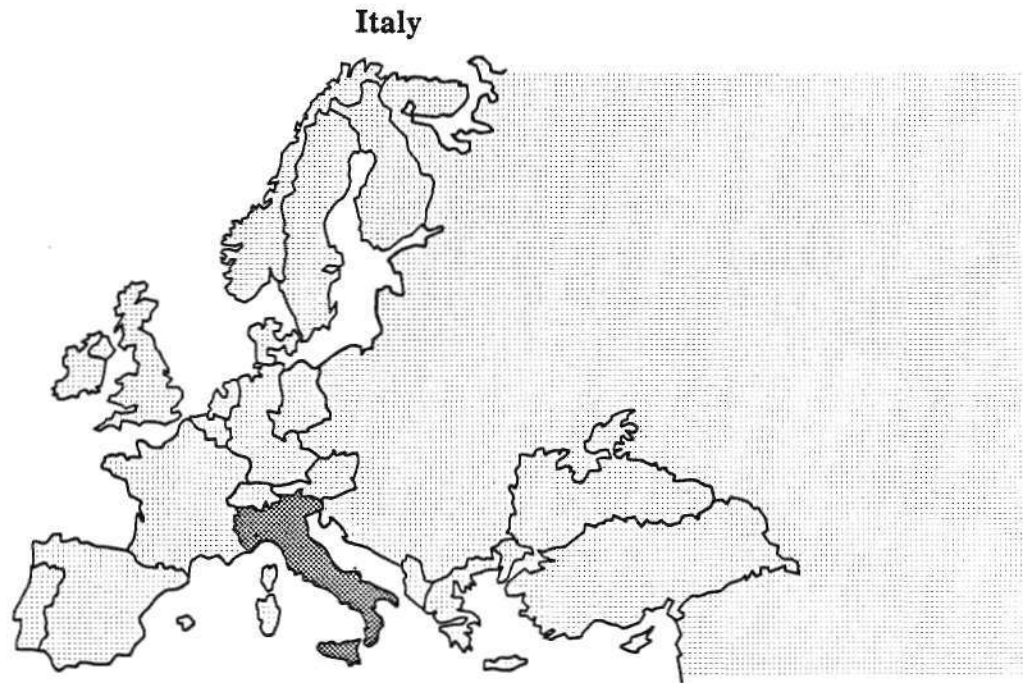
### **Switzerland**

Switzerland has the following three main CAD/CAM trade fairs:

- Computer '89—Lausanne, May
- Swisdata—Basel, September
- Computergraphics—Zurich



## 5.1 Geography and Demographics



Country Statistics		CAD/CAM-Related Data	
Total population (millions)	57.22	1988 Market size	
Area (square kilometers)	301,225	Revenue (millions)	\$333
Population density	190:1	Workstations shipped	12,117
		Installed base	29,119
Trade balance (US\$-billions)	(22.0)	<b>1988 Revenue Mix by Application</b>	
1988 GDP (1980 US\$-billions)	545.3		
1988 GDP (1980 Lit-trillions)	446.1		
1989 real GDP growth rate (% est.)	3.4		
Structure of production (% 1985 GDP)			
Agriculture	5		
Industry	39		
(Manufacturing N/A)			
Service	56		
1988 Exchange rate (Lit/US\$)	1,295.34		
1988 Unemployment rate (%)	12.2		
Total engineers	412,000		
Electrical/electronic	82,000		
Mechanical	52,000		
Chemical/biological	N/A		
Metallurgical/materials	N/A		
Civil/architectural	233,700		
Others	45,000		

MCAD 67%
 AEC 12%
 Mapping 6%
 EDA 15%

N/A = Not Available

0003844-1

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

## **5.2 Government, Trade, and Economic Forces**

### **EXECUTIVE OVERVIEW: ITALY**

The following summary highlights this region's major economic and political developments of 1988, and presents 1989 economic projections. It is based on reports from The WEFA Group (Wharton Econometric Forecasting Associates).

- Italy's GDP is forecast to grow 3.4 percent in 1989, down slightly from the preceding year, and to average 3.2 percent growth through 1993. The ongoing upswing in the Italian economy continues to be fueled by the expansion of both industrial production and domestic demand.
- This slackening GDP growth is expected to impact manufacturing and service sectors, while the building and construction industry will remain vigorous. However, capital accumulation will continue to be outstanding through investment in machinery and equipment.
- Unemployment statistics reflect the disparities that exist between the northern and southern portions of the country. Northern Italy enjoys one of the highest employment rates in Europe, contrasted with the south, which suffers from one of the highest unemployment rates.
- Italian monetary policy remains tight in order to forestall the feared over-expansion of total domestic credit.
- The consumer price index is forecast to rise by 5.2 percent in 1989 and by 4.9 in 1990. Larger capital inflows and a positive surplus on services should help maintain the current account deficit at 1 percent of GDP.
- The lira is forecast to strengthen against the U.S. dollar and to depreciate slowly against both the yen and deutsche mark.

## **5.3 Doing Business in Italy**

### **BACKGROUND ON ITALY**

#### **General Considerations**

The Italian economy presents a dramatic play of extremes. With 2.75 percent GDP (gross domestic profit) growth in 1987, Italy pulled past Britain and France to rank as the fourth largest capitalist economy, behind the United States, Japan, and West Germany. The fastest annual growth rate among major European countries in the last decade has generated much talk of an Italian economic miracle. Inflation has dropped to 5 percent, down from 21 percent in 1980. Thousands of new small businesses have sprung from the fertile ground of a high household savings rate, 23 percent of disposable income, and plenty of individual entrepreneurial drive. Dispersed outsourcing of production to these small businesses is common, enabling the smaller subcontractors to contribute substantial added value to the finished products of big companies.

Beneath the gleam of GDP growth lie economic fault lines, however. As in the United States, the two largest problems are the balance of trade and the government budget deficit.

The Italian international trade balance, which popped into a surplus condition in 1986, dropped back to the deficit side in 1987. Imports of manufactured goods, energy, and food shot up 6.25 percent, occupying an increasing share of the domestic market. At the same time, Italian exports were weak, declining 1 percent in aggregate value shipped. Domestic demand will grow in 1989 at a faster rate than GDP, because imports will continue to outpace exports and therefore detract from the total GDP figure. Unemployment seems destined to climb from the 1987 level of 10.75 percent to 11.5 percent within the next two years.

A disproportionate share of Italian exports are low-technology manufactured goods. For example, 14 percent of the 1987 total was clothing and textiles, which will become increasingly vulnerable to future competition from newly developing countries. In the high-technology sector, Olivetti is the largest Italian data processing equipment company and tenth largest worldwide, but it is the only Italian company within the industry's top 100 firms.

Higher relative unit labor costs and slow productivity growth in the 1980s continue to hamper the competitive position of Italian manufacturers. Given the foregoing, Dataquest projects that the Italian trade deficit will continue to widen through 1989 as a result of heavy import traffic and only modest export growth.

In the United States, where credit cards are quite common, many consumers know firsthand how difficult it can be to recover from a large accumulated debt. Monthly payments to reduce the debt and cover interest must be squeezed from cash that otherwise would go to normal monthly activities. The debt-to-income ratio determines the degree of constraint in selecting options. On a national scale, Americans can easily see the problems posed by the U.S. budget deficit.

By comparison, Italy has a GDP one-sixth the size of the U.S. GNP but a 1987 budget deficit two-thirds the size of the U.S. deficit. The accumulated Italian government debt is equal to 93 percent of the annual GDP. By another measure, the debt is equivalent to \$628 billion, or one-fourth the size of the huge U.S. public debt.

The tightly regulated Italian financial system, which severely restricts competition for financial assets, has thus far enabled government securities to sell very well in the domestic economy. However, as a member of the European Economic Community (EEC), Italy must bring its banking and financial systems into accord with the other nations by 1992. The pending liberalization of capital flows means that the government must ultimately increase the yield on its securities and come to grips with the deficit size. The most realistic hope for progress lies in a series of reductions in government spending.

#### **Investment Incentives**

No information on investment incentives in Italy is available at this time.

#### **Strategy for Industrial Development**

Italy's postwar governments have always had intimate relations with industry. Often the government economic policy has been a delicate balancing act addressing both state and private industry concerns.

#### *The Italian State Industries*

Most of the government-controlled enterprises are affiliates of four giant holding companies, namely:

- Industrial Reconstruction Institute (IRI)
- Manufacturing and Financial Holding Agency (EFIM)
- National Hydrocarbons Agency (ENI)
- Electric Power Agency (ENEL)

The two largest state industries are IRI and ENI, in that order. The "mixed economy" that characterizes Italy is witnessed and complicated by the well-recognized political affiliations of these groups. IRI remains very much under the influence of the Christian Democrats, while ENI's chairman is associated with the Socialists.

Although the Italy of the 1980s has never had an explicit privatization program, the early 1980s were characterized by implicit activity in this area. At that time, IRI may have sold off as many as 23 companies, raising as much as \$5.7 billion from these sales.

These privatization sales were a way of restructuring and reducing debt burdens. The uniquely Italian route to privatization took three principal forms:

- Sale of nonstrategic industries—The two most notable examples of this activity were IRI's sale of Alfa Romeo to Fiat in 1986 and ENI's sale of Lanerossi (a textile producer) to Marzotto in 1987.
- Sale of minority holding shareholdings in private companies—ENI's sale of Saipem (oil pipelaying and drilling) and Nuovo Pignone (engineering) are examples, as are IRI's sale of Alitalia SIP (the telephone utility) and IRI bank shares.
- The formation of joint ventures with Italian or foreign subsidiaries—Examples of joint ventures include ENI's joining with ICI of Britain for PVC production and IRI's merger of SGS, its semiconductor subsidiary, with Thomson of France.

For IRI, a major priority is to reorganize the telecommunications sector and form a global alliance connecting the SIP national telephone service and the Italtel telecommunications equipment maker into one company.

#### *The Italian Private Industries*

The Italian economy is strongly guided by the interests of a powerful private sector. The three flagship companies are Fiat, Ferruzzi-Montedison, and Olivetti—companies whose combined revenue totals about US\$65 billion.

The power of the key participants in this sector can be appreciated by a closeup view: Gianni Agnelli, who runs Fiat and other industrial and financial companies, controlled 26 percent of the capitalization of the entire Italian stock exchange at May 1988 share prices.

The network of control exercised by the three heads of the flagship companies—Gianni Agnelli (Fiat), Carlo de Benedetti (Ferruzzi-Montedison), and Raul Gardini (Olivetti)—can be appreciated from Figure 5.3-1, which shows the controlling interests of each group.

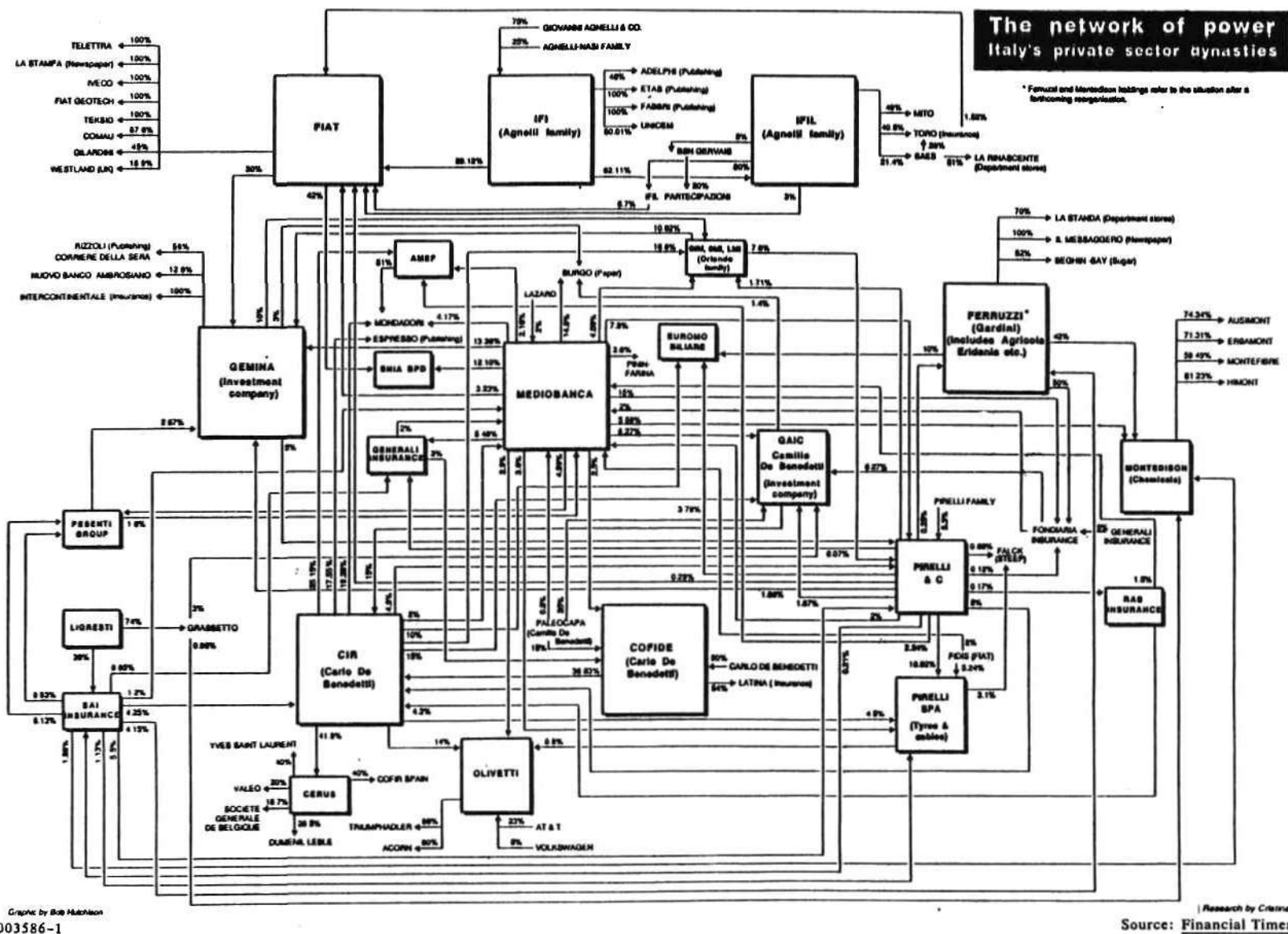
The De Mita government is under some pressure to provide antitrust legislation that would minimally address the power over the newspaper and television media held by these groups.

#### *Specific CAD/CAM-Related Industry Sectors*

**Electronics.** In electronics, the state-owned IRI group is developing a plan to spin off new technology companies from its present holding companies whenever individuals conceive promising ideas.



## The Structure of Italy's Private Industries



Olivetti continues to form international technological alliances. In early 1986, Olivetti joined Micro Age, the U.S. chain of personal computer shops, to launch Micro Age Europe, a network of personal computer and software retail outlets in Italy, France, the United Kingdom, and West Germany. Olivetti owns 89.5 percent of the joint venture, and Micro Age owns 10.5 percent. For the record, Olivetti has a 46.0 percent shareholding in Micro Age.

Also in 1986, Olivetti acquired Volkswagen's office equipment subsidiary, Triumph-Adler. This is considered the most important transaction since the 1984 alliance with AT&T. The Olivetti-AT&T alliance has been renegotiated and replaced with a 10-year agreement. The new accord would see AT&T phasing out all of its U.S. production of personal computers and handing over exclusive responsibility for this section of its business to Olivetti.

At the beginning of 1987, Olivetti and Electronic Data Systems (EDS), a General Motors subsidiary and one of the largest software and computer services companies, announced a joint venture to enter the market for computer integrated systems for manufacturing companies. The joint venture, Integrated Systems Management, will be based in Milan. EDS will use Olivetti's contacts to build its operations in Italy and the rest of Europe.

Olivetti has also announced a joint venture with Canon of Japan to make copiers, laser printers, and facsimile transmitters.

The SGS-Thomson merger of semiconductor manufacturing interests of both companies was approved by the Italian government. STET (part of the IRI group, which owns SGS) and Thomson will jointly own the new semiconductor company. It will be the largest semiconductor group in Europe, after Philips, with 3 percent of the world market and sales of \$800 million. The Italian government will continue to support the merged venture, but the two companies financed approximately 50 percent of the group's R&D in 1987.

In memory technology, SGS and Thomson have already agreed on a joint \$400 million research project under the auspices of the Eureka research program, with the aim of producing a 4Mb DRAM chip. This new venture is indicative of the strategic thinking behind the development of SGS over the past seven years. While SGS's headquarters are in Italy, most of its manufacturing activities are carried out elsewhere in the world, in locations such as Malta, Malaysia, and Singapore, where labor costs are lower.

SGS continues its investment in new products. It spends more than the average of world semiconductor manufacturers on R&D, devoting between 10 percent and 16 percent of sales per annum over the last five years to this area. In the summer of 1987, SGS opened the large new Lit 150 billion laboratory at its headquarters in Agrate. This research center will be devoted to VLSI technology, and half the cost of this research program will be borne by state funds. The Italian government is also likely to back another Lit 150 billion laboratory, which SGS is now planning in cooperation with the University of Catania in Sicily.

Earlier in 1986, SGS and AT&T made a five-year agreement under which SGS will help develop and market AT&T bipolar integrated circuits and high-voltage circuits. All products will be distributed by SGS on a worldwide basis, under the SGS trademark.

*Telecommunications.* In the telecommunications sector, Italy has been laying the foundations for a major rationalization of its fragmented telecommunications industry. In spring 1987, the Italian government approved the merger between the state-owned Italtel and Telettra, the Fiat-owned transmission equipment company. Unfortunately, this venture collapsed in late 1987, and the two companies were examining alternative strategies for the future. Italtel currently has 52 percent of the Italian telephone exchange equipment market, with the remainder in the hands of foreign-based groups.

The new company, Telit, is likely to start formal talks with GEC and Plessey on an Anglo-Italian alliance, which might then seek to involve AT&T, Ericsson, Northern Telecom, and Siemens.

According to a report from the Telecommunications Industry Research Center, Italy will spend 8.7 percent more on telecommunications equipment in 1987 than in 1986.

*Defense.* Defense is a sector where Italy's electronics industry has generally reached an advanced level of autonomy and technological sophistication. The state is heavily involved through the Selenia-Elsag subsidiaries of the holding corporation IRI. In 1985, 51 percent of Selenia's turnover of Lit 698 billion came from defense systems. A similar portion of Elsag's sales of Lit 207 billion in 1985 came from systems and equipment in the defense sector. Italy's leader in electronic countermeasure (ECM) continues to be Elettronica, the Rome-based company in which Plessey has a 35 percent share.

*Computers.* The Italian computer hardware industry is dominated by Olivetti, the number two European-headquartered data processing company, with 1986 DP revenue of \$3.9 billion. AT&T owns about a quarter of Olivetti, and the two firms have several joint-marketing and technology-exchange activities. Traditionally strong in PCs and office systems, Olivetti is in the process of making a major push into supermini-computers and other systems, in part through OEM arrangements. For example, Olivetti sells Stratus' fault-tolerant systems and A&T's 3B superminicomputers. Italy has a substantial computer software and services industry, composed of thousands of small companies.

The Italian computer market has been one of the fastest-growing markets in all of Western Europe. Although growth is expected to slow down somewhat, Italy will remain an area with a growing market for several years.

The slowdown in computer industry growth will be most pronounced in the personal computer market, but the forecasts for midrange multiuser systems and systems used in integrated networks are bullish.

Rome was recently selected by IBM as one of its new supercomputer research center sites.

*Other.* Sony Electronics will be the first Japanese company to build its own factory in Italy. It plans to open a plant in the Trentino region of northern Italy to produce 2 million magnetic cassette tapes a month. Twenty-five percent of Sony's Italian production will be for export, in part substituting production for the European market carried out in France.

Cap Gemini Sogeti, the French computer services group, purchased the Italian data processing company, Destione Dati, to complete its European network. The French group has taken an 80 percent stake in the Milan-based company, which provides computer services to industry and local government. Cap Gemini is eventually expected to take 100 percent control.

## GOVERNMENT POLICIES

Italy is a parliamentary republic with two houses: a senate and chamber of deputies. The president is elected every seven years. He nominates the premier, who, in turn, selects the Council of Ministers (cabinet) from among members of the parliament. Members of both parliamentary houses are elected by popular vote for a maximum of five years.

A separate judiciary branch, based largely on Roman law, has partial judicial review of legislation. A constitutional court is roughly equivalent to, but not as strong as, the U.S. Supreme Court. The highly centralized government appoints executives for the 93 provinces and 20 regions that have limited government powers. The premier and his cabinet, the top vote getters from major parties, plan policies and make major decisions.

### Financial Policy

#### *Deficit*

Italy continues to need a policy to reduce the country's high public-sector deficit. At 14.3 percent of GDP, this is one of the highest in Europe. Italy's cumulative state debt is roughly equal to the country's annual GDP. The public-sector deficit, which was Lit 110,000 billion in 1986, is forecast by the government to decrease to Lit 100,000 billion in 1987. The Bank of Italy, however, anticipates a budget deficit of closer to Lit 110,000 in 1987. The deficit problem will prevent Italian interest rates from falling.

Italy's state bureaucracy creates inefficiency and resulting high costs, and we do not believe that this situation will be helped by the high wage settlement for civil servants and local authority workers. The wage settlement provides for these workers' salaries to rise by 8 percent in 1986, 5 percent in 1987, and an additional 5 percent in 1988.

#### *Liberalization*

In the summer of 1986, the Italian government relaxed its exchange control regulations. The compulsory noninterest-bearing deposits for investments abroad were reduced from 25 percent to 15 percent of the investment sum. In spring 1987, these deposits, which had to be lodged with the Bank of Italy, were abolished.

The liberalization measures also increased the amount of currency that Italians can take on foreign trips, from Lit 1.6 million to Lit 2.1 million. Restrictions on the use of credit cards abroad were removed.

#### *Labor Costs, Inflation, and Employment*

Inflationary expectations are declining, albeit slowly. Offsetting the beneficial effect of this trend on labor costs will be the effects of the retroactive pay adjustments upon conclusion of pending wage contract negotiations. Nominal wage increases in 1987 were higher than in 1986, and they will be still higher in 1988. This may boost the increase in the cost of living index.

In autumn 1986, the Italian government announced plans to spend Lit 7,500 billion over three years to create between 500,000 and 700,000 new jobs in the south of the country.

The unemployment rate dropped from 1986 to 1987. Higher growth and increased investment in capacity expansion should boost the rate of job creation.

#### *Foreign Policy*

In a novel financing scheme, Public Development Assistance (PDA) has become a major component of Italy's foreign policy. In 1988, the government earmarked Lit 4,500 billion for development assistance, compared with some Lit 300 billion a year ago. What is unique about this program is that 80 percent of the aid is procurement related. Moreover, the projects provide work for Italian factories, engineering firms, and construction companies.

Some of these projects include the following:

- An agricultural mechanization program in Morocco
- Introduction of a microwave digital transmission network in Costa Rica
- Construction of a radar system for the Chiang Mai Airport in Thailand
- Construction of a natural gas treatment center in Argentina

## **Government R&D Projects**

Funds for high-technology investment within the economy are limited, and R&D spending is half that of other major industrial economies. Much of the effective progress in technology has come through acquisitions and strategic partnerships with foreign companies. (See "Strategy for Industrial Development" in this document.)

## **Trade and Economic Policies**

### *Trade Policy*

Italy is a member of the European Economic Community (EEC), International Monetary Fund (IMF), Organization for Economic Cooperation and Development (OECD) and is a signatory to the General Agreement to Tariffs and Trade (GATT). In general, Italy has a liberal trade policy, with the exception of agricultural imports that are subject to the common agricultural policy of the EEC.

Because Italy has few domestic natural resources, it must depend on a heavy volume of imports in key areas of energy resources, capital goods, and food and agricultural products.

### *Import Tariff Structure*

Customs charges in Italy are payable in the currency of the country into which the goods are imported. Traders may obtain currency quotations through their banks.

Common Customs Tariff (CCT) duty rates are applied to all dutiable products imported from non-EEC countries, except those governed by the Common Agricultural Policy (CAP) of the European Economic community. Trade among the EEC member states is duty free except with Spain and Portugal, which receive significant duty reductions.

Information regarding Italian import duties applicable to specific products may be obtained free of charge from the Office of European Community Affairs. Inquiries should contain a complete product description, including CCCN or BTN numbers, if known. The EEC employs the Customs Cooperation Council Nomenclature (CCCN), also known as the Brussels Tariff Nomenclature (BTN). As of January 1, 1988, the EEC began using the Harmonized System Nomenclature. This will involve some changes in classification and the duties imposed.

Third-country duty rates listed in the EEC's CCT are in two columns—autonomous and conventional. The latter are lower rates and are applied to imports of items from more than 80 GATT member states, including the United States, and to countries that have concluded agreements with the EEC incorporating the most-favored-nation (MFN)

clause. The EEC countries grant MFN treatment to all countries. The higher autonomous rates are applied only where no conventional rates are listed. Duty rates are not excessive; manufactured goods fall within a range of 5 to 7 percent. However, some electronic products have duty rates of up to 14 percent.

The EEC members extend preferential tariff treatment under EEC agreements to imports from members of the African, Caribbean, and Pacific Convention of Rome, Turkey, Morocco, Tunisia, Algeria, Spain, Israel, Malta, Lebanon, Cyprus, Egypt, Jordan, Syria, and their overseas countries and territories. The EEC also grants tariff preferences to more than 100 developing countries and about 40 overseas territories under the EEC's Generalized System of Preferences. Imports of nearly all semi-manufactured and manufactured goods considered to originate in these countries and territories enter the community duty free. Annual duty-free quotas are established for those products considered to be "sensitive."

Free trade agreements have been concluded between the EEC and the European Free Trade Association (EFTA), which includes Finland, Austria, Norway, Iceland, Sweden, and Switzerland. Under the terms of these agreements, the EEC exempted most industrial products and certain processed agricultural products from import duties.

*Basis of Duty Assessment.* The applicable duties are imposed on the cost, insurance, and freight (c.i.f.) value of the shipment. Virtually all import duties listed are on an ad valorem basis; that is, percent charges levied on the dutiable value of the imported goods. As of July 1, 1980, Italy agreed to enact the Tokyo Round Trade Agreement on Customs Valuation.

*Value-Added Tax.* The value-added tax (VAT) is applied on the c.i.f. value plus the duty charged on the product. Important exempted services and items include transfer of shares and bank bonds, transfer of businesses and land, commissions paid on goods exported, the forwarding of goods abroad, property rental, banking and financial transactions, and insurance. The VAT is imposed as a flat rate, but the rate is much higher than the sales tax in the United States. The VAT is applied on domestically produced goods as well as on imports. The difference is either paid to the government or, in the case of a balance in favor of the seller, the amount can be carried forward and offset against future amounts payable. The consumer ultimately bears the full burden of the tax.

In Italy, the standard VAT rate applied on most industrial goods is 18 percent. An increased VAT of 20 to 38 percent is imposed on luxury items, such as perfumes, jewelry, stereo equipment, cameras, and private cars.

*Import Controls.* With the exception of a small group of hard core items, largely agricultural, practically all goods originating in the United States and most other free-world countries can be imported without import licenses and free of quantitative restrictions.

### *Multilateral Trade Negotiations*

The GATT Agreement on Government Procurement was one of seven nontariff barrier agreements concluded during the Tokyo Round negotiations in 1979. The United States and Italy (through the EEC) are 2 of the 21 countries that signed the agreement or code, which was implemented in 1981.

To ensure that U.S. suppliers are given an equal opportunity to bid on code-covered procurement contracts, a uniform set of procurement procedures was developed. These procedures must be followed during all stages of the procurement process. Code provisions include requirements for how code-covered procurement contracts must be advertised, evaluated, and awarded. In general, an Italian contract will be covered by these provisions if it is awarded by 1 of the 18 Italian ministries obligated to follow the provisions of the agreement. In addition, the contract must be worth more than 130,000 Special Drawing Rights (SDRs) (roughly \$148,000 in 1987).

U.S. companies' competitiveness in signatory procurement markets should improve based on new amendments agreed upon in 1986. For example, the bid submission period (that is, the amount of time between the date the solicitation notice is published and when the bid must be submitted) has been increased from 30 to 40 days. Also, U.S. subsidiaries in code-signatory countries should be treated as domestic companies, and information on winning bids (including the price of the bid and the name of the successful tenderer) will be published.

A new round of multilateral trade negotiations, known as the Uruguay Round, was launched at a GATT ministerial meeting at Punta del Este in September 1986. The agenda covers the traditional area of trade in goods, as well as new areas not currently subject to GATT rules.

The Uruguay Round negotiations in goods will cover a wide range of industries, including aerospace, automotive and consumer goods, basic industries, capital goods, and consumer electronics. Aside from the traditional topics, there will be three new issues on the agenda: services, intellectual property rights, and investment. Moreover, separate negotiations will focus on improving both the functioning of the GATT system as a whole, and its dispute-settlement process in particular.

### *Free Trade Zones and Warehousing*

There are two free zones located at Trieste and Venice. Goods of foreign origin may be brought into the free trade zones without the payment of customs duties and remain free of all such duties while held in the zones or if subsequently transshipped or reexported. They may be freely negotiated, manipulated, and processed industrially. Operations authorized include loading, unloading, mixing, warehousing, and cargo handling. Retail sale is prohibited; there are no free ports in Italy.



Italy also has more than 800 general warehouses that are similar to a bonded warehouse of the United States. More limited facilities are available in free depots located in 10 port cities.

No limitations exist as to the type or origin of merchandise that can be stored in either free trade zones or bonded or customs warehouses.

#### **Intellectual Property Protection**

Italy is a member of the "Paris Union" International Convention for the Protection of Industrial Property (patents and trademarks) to which the United States and about 85 other countries adhere. Thus, U.S. citizens are entitled to the same treatment in acquiring and maintaining patent and trademark protection in Italy as are Italians. In addition, after filing a patent application in the United States, a U.S. citizen is entitled to a 12-month period within which to file a corresponding application in Italy and receive there the benefit of his or her first U.S. filing date (rights of priority). The priority right filing period for trademarks is 6 months.

Italy is a member of the Berne Copyright Union and also adheres to the Universal Copyright Convention to which the United States and 50 other countries are signatories. U.S. authors can thereby obtain copyright protection in Italy for their works first copyrighted in the United States merely by placing on the works their names, the dates of first publication, and the symbol "C" in a circle. Italian authors have the same rights in the United States for their works first copyrighted in Italy.

Patent and trademark applications and inquiries should be addressed to the Ministero dell'Industria e Commercio. Inquiries concerning copyrights should be addressed to the Presidenza del Consiglio dei Ministri.

#### **Patents**

Patents are granted for 15 years from the effective filing date of application. They are assignable and transferable. A patent can be subject to compulsory licensing if not used within 3 years from date of grant or 4 years from the filing date of application, whichever is later.

Licensing and technical assistance agreements with foreign companies are encouraged by the government approval. The foreign exchange necessary to effect payment abroad (including the United States) of bona fide royalties and/or technical assistance fees can be obtained simply upon application to the Italian Exchange Office through a bank.

Annual taxes must be paid throughout the period an Italian patent is in force. These taxes are progressive and range from Lit 1,000 for year 1 to Lit 35,000 for year 15.

### *Copyrights*

Executive recognition in the form of copyright protection to the author is accorded intellectual creations pertaining to science, literature, music, decorative arts, architecture, the theater, and motion pictures. Copyright protection for an author's work exists for the life of the author, plus 50 years after his or her death. In the case of motion pictures, protection is limited to 30 years from the date of the first public screening. Anonymous works are protected for 50 years after publication.

### *Trademarks*

Some types of terms are not registrable as trademarks, such as those deemed to be generic, those containing false indications of quality or origin of goods, and those similar terms already registered by others in Italy or for which applications are pending. For some goods, geographic names may not be used in trademarks, nor can the portraits of persons be registered without their consent. Surnames, other than those of the applicant for registration, cannot be registered if they reflect unfavorably upon the persons who have the right use to the names.

Trademark applications are examined for acceptability of their format and consistency with the above criteria. If an application is in order, the mark will be registered. No opportunity is provided for opposition, and the first applicant is entitled to registration. However, any other person who claims to be the first user of the mark in Italy can have the prior registration canceled, provided one can prove the claim. No prior-use claim can be rendered after the registered mark is five years old.

Trademarks are registered for 20 years from the effective application filing date and are renewable for similar periods. Failure to use a mark within 3 years after its registration can result in cancellation. Trademarks may be assigned, provided that such action involves no deceptive trade practice.

### **Taxation**

This section describes the principal forms of Italian taxation, including income tax, corporate tax, capital gains tax, and double tax relief. This discussion does not include other taxes levied, such as local tax, registration tax (for increased capital, mergers, and leasing) and stamp tax.

#### *Income Tax*

*Resident Companies.* Resident and nonresident corporations pay corporation income tax (IRPEG) and local income tax (ILOR). Corporations having their statutory domicile, principal management, or main activity in Italy are treated as resident companies and are subject to corporation income tax on worldwide income.

Taxable income is based, for both corporation and local income tax purposes, on net profits realized in the accounting year, in accordance with the profit and loss account, as adjusted for tax purposes. Local income tax is generally chargeable only on income from Italian sources.

*Nonresident Companies.* Nonresident companies are subject to corporation income tax and local income tax on income derived from a permanent establishment in Italy; interest; dividends; income from real property; and royalties and rents from Italian sources.

#### *Corporation Tax*

The corporation income tax rate is 36 percent, and the local income tax rate is 15 percent plus a temporary surcharge. The latter is deductible in computing corporation income tax, giving an effective overall corporation tax rate of 46.4 percent. Dividends are subject to a 10 percent withholding tax that is creditable against corporation income tax.

#### *Capital Gains Tax*

Capital gains are subject to corporation and local income taxes in the same way as income, insofar as they are connected with a commercial activity in Italy. However, tax on gains credited to a special reserve and reinvested in fixed depreciable assets within the two following years may be deferred. A special local tax applies to increases in value of real property.

#### *Double Tax Relief*

In the absence of a tax treaty, foreign income tax is credited against corporation income tax payable on the same income. The credit is limited to the proportion of the Italian tax corresponding to that borne by the foreign income to total income. It is granted on a reciprocal basis, within the same limits as in the source country. If the source country grants neither credit nor exemption, a credit of 90 percent of the maximum is granted for business income and a credit of 50 percent of the maximum is granted for other income.

## **ITALY'S FOREIGN RELATIONSHIPS**

### **Relationship to the United States**

The United States and Italy enjoy close trading ties, with the trade balance traditionally in the United States' favor. In 1987, Italy imported \$11.7 billion in U.S. goods, whereas it exported only \$5.5 billion. Dataquest expects excellent opportunities

for U.S. exporters to continue, based on the declining dollar. As of May 1988, the U.S. dollar was 40 percent weaker against the lira than in 1985, allowing significantly lower priced U.S. products for Italian purchases.

An analysis of Italy's total trade shows that the United States is Italy's third most important source of imports and third most important destination for exports. In turn, Italy is the United States' tenth most important export destination and seventh most important source of imports.

Italy's major imports from the United States in 1986 were:

- Typewriters
- Calculators
- Computers
- Food and agricultural products
- Coal and coal products
- Transportation equipment
- Jet aircraft and parts

Italy's leading exports to the United States in 1986 were:

- Mechanical products
- Leather shoes
- Silver, gold, and platinum
- Transportation equipment
- Cars and car parts

According to 1984 Bank of Italy data (f.o.b.c.i.f.), the United States accounts for 8.9 percent of total Italian trade (imports plus exports), after West Germany (16.4 percent) and France (13.2 percent) but before the United Kingdom (5.9 percent) and Switzerland (3.9 percent).

## INVESTMENT CONSIDERATIONS

### Direct Foreign Investment

Italy's general policy toward inward foreign investment has been consistently favorable, motivated by the belief that foreign investment contributes to economic growth, employment, and the level of technology. With few exceptions, Italy does not limit the extent of foreign ownership in an Italian corporation or other business entity. The Italian government's stance is nondiscriminatory, either in favor of or against foreign investment, as compared with domestic investment. The United States has been the leading foreign investor in Italy for more than a decade.

Italy no longer generally requires that all new industrial plants be authorized by the Ministry of Industry and Commerce. However, major industrial investments are required to be submitted to CIPE (Interministerial Committee for Economic Planning) to verify that the proposed investments conform to the objectives set forth in the government's economic plan. (The primary objectives of this plan are job creation and overall economic development, avoiding the overconcentration of industry in northern and central Italy.) Specifically, investments subject to verification are those with a capitalization of more than Lit 5 billion (about \$8 million) or any investment project in excess of Lit 7 billion (\$11.2 million).

### Investment Opportunities

The U.S. Department of Commerce, through the U.S. Embassy in Italy, has identified a number of key industrial sectors for foreign exporters. Those of particular interest to the CAD/CAM industry are:

- Computer hardware and software
- Energy systems and technology

### *Computer Hardware and Software*

Italy trails other European countries in expenditures for EDP hardware (automated electronic equipment and data processing systems), but it is catching up. Local production still cannot meet local demand, however, and the Italian market for imported EDP hardware will grow at an estimated 14.3 percent through 1989. Minicomputers are in greatest demand, but demand for mainframes and large systems is strong also. U.S. EDP manufacturers enjoy an excellent reputation in Italy. Imports also play a major role in Italy's software market. While Italian-produced software is becoming more competitive, U.S. and other imports will continue to find a most receptive market in Italy.

### *Energy Systems and Technology*

The 1985-1986 revisions of the Italian National Energy Plan (NEP) called for reducing dependency on petroleum. Particular attention is being given to planning new coal-fired plants. As this plan is implemented over the next three years, new investment by ENEL (the National Electric Board) and upgrading of the national railway system are expected to sustain high demand for imported energy systems and technologies, as well as equipment. U.S. suppliers of highly sophisticated, innovative products and services will find good marketing prospects for nuclear components, licenses, and technical cooperation; coal-handling equipment; industrial and residential energy-saving equipment; and systems for exploitation of renewable sources of energy. This market is complementary to the facilities design and management market.

## **OTHER BUSINESS CONSIDERATIONS**

### **Corporate Law**

Under the corporate laws of Italy, there are eight types of business organizations, namely:

- Individual or sole proprietorship
- Simple partnership
- General or unlimited partnership
- Limited partnership
- Limited liability company
- Cooperative
- Joint venture
- Corporation

Definitions and details of each of these business forms are provided in the following paragraphs.

### *Individual or Sole Proprietorship*

An individual proprietorship established for the production or exchange of goods and services is responsible for its operation to the extent of the proprietor's business assets and personal property.

### *Simple Partnership*

A partnership is a group of two or more persons conducting trade jointly. The simple partnership (*Societa Semplice*) can be established without any particular formalities. It is set up either through the joint operation of a business or by contract.

Each member of the company is liable for any business debts, unless otherwise specified and publicized, to the full extent of his or her personal assets. A partner's share of profits and losses is proportional to that person's contribution of capital.

### *General or Unlimited Partnership*

In an unlimited partnership (*Societa in Nome Collectivo—S.n.c.*), all partners are jointly liable without limitation for partnership obligations. An unlimited partnership may not issue bonds, and any of the partners may be appointed to serve as directors.

### *Limited Partnership*

Liability in a limited partnership (*Societa in Accomandita Semplice—S.a.s.*) is joint, several, and unlimited for the general partners. Limited partners are liable only to the extent of their original capital investment. A limited partnership may not issue bonds, and subscribed capital cannot be represented by shares. Only general partners may participate in the management.

### *Limited Partnership with Shares*

A limited partnership with share (*Societa in Accomandita per Azioni—S.a.p.A.*) has the same structure as a limited partnership, except that holdings of the partners are represented by shares. Companies limited by shares may issue bonds, within the limits provided for the joint stock companies in the limited partnership. Liability is joint, several, and unlimited for general partners, while limited partners are liable to the extent of the original capital invested. Many of the regulations governing corporations are applicable to this form of business.

### *Limited Liability Company*

Owners in a limited liability company (*Societa a Responsability Limitata—S.r.l.*) are not personally liable for company obligations beyond their subscription quotas. Unlike a corporation, a limited liability company does not have quotas represented by shares of stock. Such a company cannot issue bonds, and a limited liability company must have minimum capital of Lit 20 million.

### *Cooperative*

Cooperatives (*Societa Cooperative*) and a mutual insurance or assurance company may be established to carry out such activities as production, marketing, banking, and insurance. Cooperatives are subject to various restrictions and to governmental

supervision. Each partner may not hold more than \$400 in shares, and the board of directors must approve assigning of shares and admission of new members.

### *Joint Venture*

A joint venture (Associazione in Partecipazione) involves the participation by the supplier of capital in the profits of the business. The operator manages the business and is solely responsible for the obligations he or she assumes toward third parties. The person furnishing capital is responsible for any loss in direct proportion to his or her share in the net profit, limited to the amount of the original investment.

### *Corporation*

The Italian corporation (Societa per Azioni—S.p.A.) is similar in form to the corporation in the United States and is usually the most suitable form for large enterprises. Participation quotas are represented by shares of stock, and personal liability is limited to the amount of shares owned. The corporation is a legal person—an entity separate from its shareholders—and is liable for its obligations only to the extent of its assets.

A corporation must have at least two shareholders. A minimum of Lit 200 million is required for incorporation, 30 percent of which must be deposited with Banca d'Italia in a noninterest bearing account until organization formalities are completed. The entire capital stock of the company must be subscribed. If the original stock exceeds Lit 2 billion, the Ministry of Treasury must give special authorization.

## CAD/CAM

### **Distribution Channels**

#### *Foreign Suppliers*

Although at present there are relatively few indigenous Italian hardware or software products that have an established market share, there are a host of dealers/distributors of American and northern European products.

Although the larger non-European companies—in particular, the turnkey vendors and computer/workstation manufacturers—have their own subsidiaries, the more specialist companies cannot yet justify an Italian office and so are represented by dealers. Many of these are small, but they often have a good blend of technical and commercial skills and usually will sell a fairly diverse range of hardware and software products. A good and typical example is 3D Advanced Computer Modeling, based in



Bergamo. This company distributes Cambridge Computer Graphics products; the architectural packages Rucaps and Sonata from the U.K. company t2 Solutions (ex. GMWC); and software from a Dutch company, Design Computing Ltd. 3D Advanced Computer Modeling is small (6 employees), it sells aggressively in each of the different markets in which it is active, and it is constantly open to the possibility of increasing its portfolio of imported products.

#### *Italian Suppliers*

Among Italian companies selling their own products, Olivetti has the most substantial market share. Other native vendors of note are Brain, Cadlab, FIMI (an Italian subsidiary of the Philips group that produces graphics and industrial terminals), Infotronic (which markets high performance graphics boards), Italcad, and VDS.

Italy has entered the CAD/CAM and CIM markets late; because of this, it is likely that Italy will benefit from entering the market seriously, as a new generation of improved products is being released. Therefore, Italy will be in a position to exploit workstations, knowledge-based systems, and other new technologies as they become available.

#### **CAD/CAM Publications**

A large number of general-purpose computer journals are available in Italy. As elsewhere, some of these carry articles about CAD/CAM. The two most important specialized CAD/CAM/graphics journals are *Computer Grafica* and *Pixel*. Table 5.3-1 lists the Italian CAD/CAM publishers' addresses.

**Table 5.3-1**

#### **Italian CAD/CAM Publishers**

<b>Publisher</b>	<b>Address</b>	<b>Comments</b>
Alca Publications S.n.c.	Via delle Brughiere 6 20024 Garbagnate Milanese (M1) Italia	
Azzurra Editrice S.r.l.	Via della Moscova 49 20121 Milano (M1) Italia	
Computer World	Via Vida 7 20127 Milano (M1) Italia	A weekly general-computing tabloid paper
Edit Promotion Service	Via Donatello 1 20133 Milano (M1) Italia	

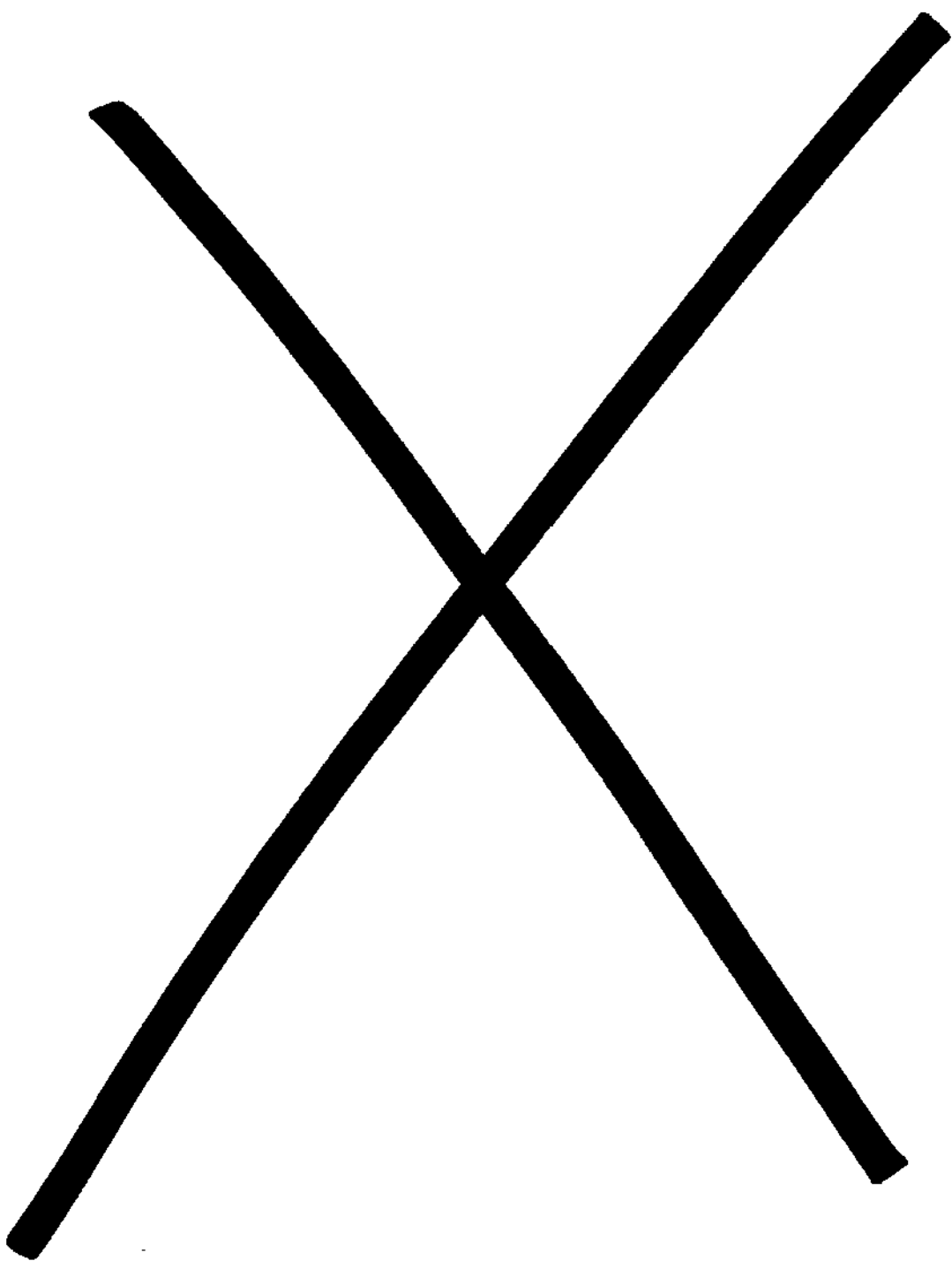
(Continued)

Table 5.3-1 (Continued)

## Italian CAD/CAM Publishers

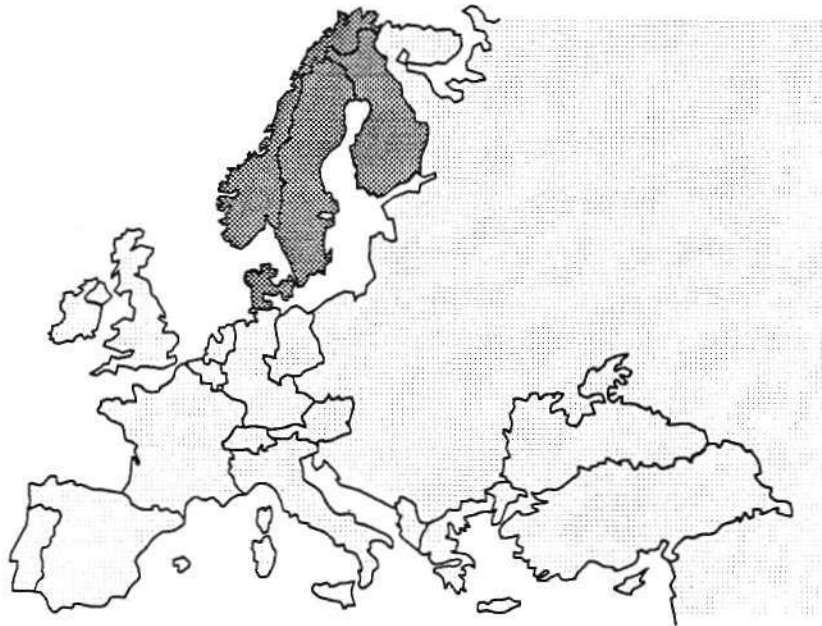
Publisher	Address	Comments
Editrice il Rostro S.a.s.	Di Giovane Alfonso EC Via Donatello 1 20133 Milano (M1) Italia	Publications include <i>Pixel</i>
Esse S.r.l. Edizioni e Distribuzioni	Via Cherubini 6 20154 Milano (M1) Italia	Various technical publications including <i>Interfacia</i> , <i>Progettare</i> , and <i>Il Nuove Cantiere</i>
Fae Riviste Franco Angeli Editore Riviste S.r.l.	Viale Monza 106 20127 Milano (M1) Italia	
Gruppo Alfa Linea S.r.l.	Via Guerrini 5 20133 Milano (M1) Italia	
Gruppo Editoriale Jackson S.p.A.	Via Rosellini 13 20124 Milano (M1) Italia	Various technical publications including <i>Computer Grafica</i> , <i>Informatica</i> , and <i>Olivetti Prodest User</i>
Gruppo Editorial JCE	Via Ferri 6 20092 Cinisello Balsamo (M1) Italia	
Tecnoimprese	Viale Stelvio 21 20159 Milano (M1) Italia	
Ufficio Stile	Viale Stelvio 21 20159 Milano (M1) Italia	
Flexible Industrial Automation	c/o CEU - Centro Esposizioni UCIMU Viale Fulvio Testi 128 20092 Cinisello Balsamo (M1) Italia	

Source: Dataquest  
May 1989



## 6.1 Geography and Demographics

Scandinavia

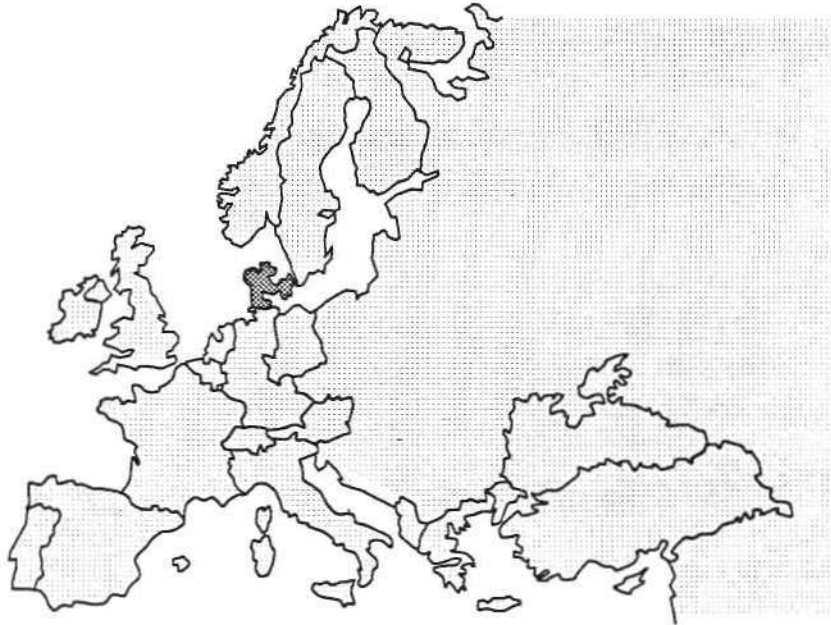


Regional Statistics		CAD/CAM-Related Data	
Total engineers	180,949	1988 Market size	
Electrical/electronic	N/A	Revenue (millions)	\$319
Mechanical	N/A	Workstations shipped	10,730
Chemical/biological	N/A	Installed base	24,275
Metallurgical/materials	N/A	1988 Revenue Mix by Application	
Civil/architectural	N/A	<p>A pie chart illustrating the distribution of 1988 revenue across four CAD/CAM applications. The largest segment is MCAD at 60%, followed by AEC and EDA both at 16%, and Mapping at 8%.</p>	
Others	N/A		
N/A = Not Available		<p>Legend for the pie chart:  MCAD 60% (diagonal lines)  AEC 16% (dark gray)  Mapping 8% (cross-hatch)  EDA 16% (white)</p>	

0003845-1

Source: U.S. Department of Commerce  
The World Bank  
Dataquest  
April 1989

## Denmark

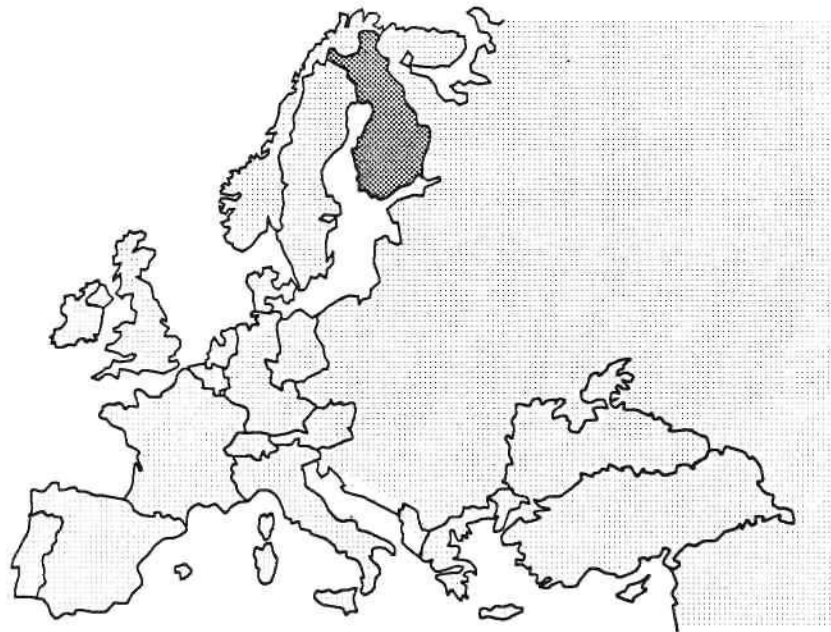


Country Statistics			
Total population (millions)	5.12	1988 Exchange rate (DKr/US\$)	6.69
Area (square kilometers)	43,069		
Population density	119:1	1988 Unemployment rate (%)	8.7
Trade balance (US\$-billions)	(2.2)	Total engineers	N/A
1988 GDP (1980 US\$-billions)	76.6	Electrical/electronic	N/A
1988 GDP (1980 DKr-billions)	431.1	Mechanical	N/A
1989 real GDP growth rate (% est.) (1.5)		Chemical/biological	N/A
Structure of production (% 1985 GDP)		Metallurgical/materials	N/A
Agriculture	5	Civil/architectural	N/A
Industry	24	Others	N/A
(Manufacturing = 17%)			
Service	71		
		N/A = Not Available	

0003845-2

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

## Finland



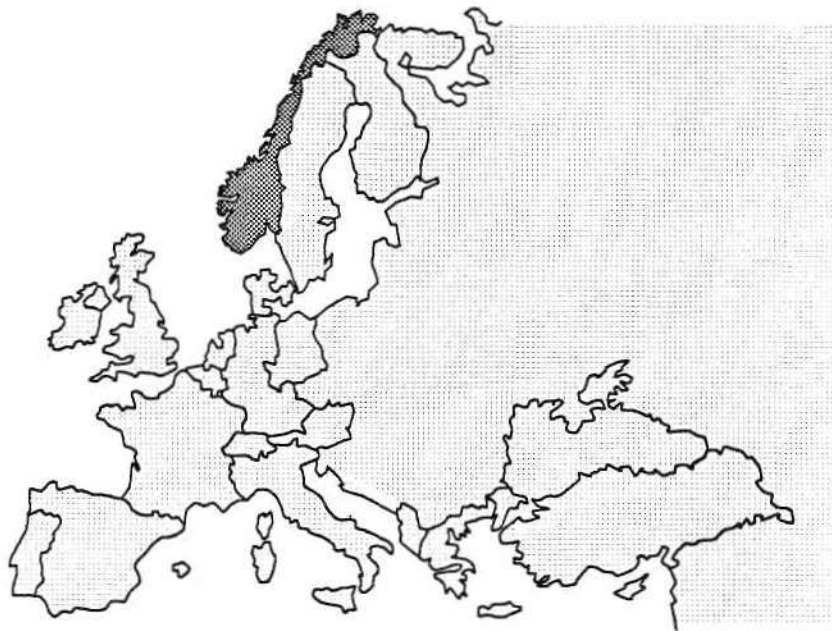
Country Statistics			
Total population (millions)	4.92	1988 Exchange rate (Fmk/US\$)	4.16
Area (square kilometers)	337,032		
Population density	15:1	1988 Unemployment rate (%)	4.8
Trade balance (US\$-billions)	2.2	Total engineers	N/A
1988 GDP (1980 US\$-billions)	76.6	Electrical/electronic	N/A
1988 GDP (1980 Fmk-billions)	244.9	Mechanical	N/A
1989 real GDP growth rate (% est.)	2.0	Chemical/biological	N/A
Structure of production (% 1985 GDP)		Metallurgical/materials	N/A
Agriculture	7	Civil/architectural	N/A
Industry	33	Others	N/A
(Manufacturing = 23%)			
Service	60		
		N/A = Not Available	

0003845-3

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

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Norway



## Country Statistics

Total population (millions)	4.17	1988 Exchange rate (Nkr/US\$)	6.49
Area (square kilometers)	324,219		
Population density	13:1	1988 Unemployment rate (%)	1.9
Trade balance (US\$-billions)	(5.0)	Total engineers	N/A
1988 GDP (1980 US\$-billions)	72.3	Electrical/electronic	N/A
1988 GDP (1980 Nkr-billions)	356.8	Mechanical	N/A
1989 real GDP growth rate (% est.)	2.0	Chemical/biological	N/A
Structure of production (% 1985 GDP)		Metallurgical/materials	N/A
Agriculture	4	Civil/architectural	N/A
Industry	43	Others	N/A
(Manufacturing = 14%)			
Service	54		

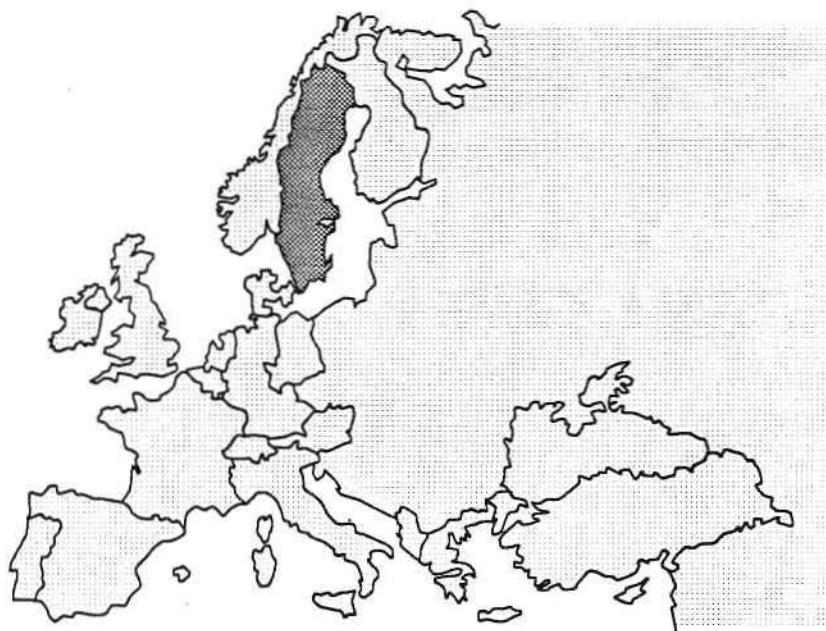
N/A = Not Available

0003845-4

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989



Sweden



Country Statistics			
Total population (millions)	8.37	1988 Exchange rate (SKr/US\$)	6.11
Area (square kilometers)	449,964		
Population density	19:1	1988 Unemployment rate (%)	1.8
Trade balance (US\$-billions)	4.8	Total engineers	N/A
1988 GDP (1980 US\$-billions)	144.2	Electrical/electronic	N/A
1988 GDP (1980 SKr-billions)	609.7	Mechanical	N/A
1989 real GDP growth rate (% est.)	2.4	Chemical/biological	N/A
Structure of production (% 1985 GDP)		Metallurgical/materials	N/A
Agriculture	3	Civil/architectural	N/A
Industry	31	Others	N/A
(Manufacturing = 21%)			
Service	66		
		N/A = Not Available	

0003845-5

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

## **6.2 Government, Trade, and Economic Forces**

### **EXECUTIVE OVERVIEW: SCANDINAVIA**

The following summary highlights this region's major economic and political developments of 1988, and presents 1989 economic projections. It is based on reports from The WEFA Group (Wharton Econometric Forecasting Associates).

#### **Denmark**

- The GDP fell 0.2 percent in 1988, reflecting a decline both in domestic demand and gross fixed investment. Unemployment rose sharply in 1988, and inflation began to level off.
- The merchandise trade surplus widened in 1988, with export values rising 5.9 percent to DKr 135.6 billion and imports growing only 3.3 percent to DKr 129.7 billion in the first three quarters.
- Flat growth is forecast for the near term, but an expected increase in domestic demand should produce 1989 GDP growth of 2.2 percent. In the longer term, the early 1990s should see strong growth in investment as a number of infrastructure projects come on stream.

#### **Finland**

- The Finnish economy continued its expansion in 1988, with real GDP growth of 3.2 percent.
- The Finnish economy is experiencing a consumerism boom, led by consumer goods and personal travel. As a result, inflation continues to accelerate, and the current account balance is expanding.
- Concern about this external balance of the economy and domestic inflation has led the central bank to tighten its monetary policy.
- In 1989, growth is expected to slow to 2.0 percent, as both private consumption and investment also slow. This is due to Finland's declining competitiveness, a swelling current account deficit, and high inflation.

#### **Iceland**

- Following four years of steady, strong growth, Iceland's real GDP was virtually unchanged in 1988 (0.6 percent growth).
- The Icelandic economy is forecast to recover in 1989, with the GDP increasing 1.9 percent over 1988.

### Norway

- Norway's economic growth was largely static in 1988, with the GDP growing only 0.7 percent over 1987. Indications that the economy is slowing include rising unemployment and a decreasing demand for credit.
- The Norwegian government is attempting to restore economic balance by restructuring the economy. This may well involve the abolition of subsidies to inefficient industries.
- Slow, 2 percent growth is forecast for 1989, with productivity picking up in the short term as legislation limits wage growth.

### Sweden

- Sweden's economic and consumption boom continued in 1988, with GDP growing 2.6 percent and disposable income growing 3.3 percent in the first half of the year.
- Inflation trended upward in 1988, and the Swedish government, anxious to ride out the boom, has been slow to address the "overheating" problem of the economy.
- Domestic demand is forecast to slow in 1989, as the brakes are applied to consumer spending by a reduction in the savings rate. Likewise, investment is forecast to grow more slowly as capacity constraints are alleviated and demand slows.
- Sweden's 1989 GDP growth rate is forecast to nearly match that of 1988—2.4 percent.

## **6.3 Doing Business in Scandinavia**

### **BACKGROUND ON DENMARK**

#### **General Considerations**

Denmark is the only Nordic country that is part of the Economic Community (EC). As such, it benefits from the favorable trading conditions with the other EC countries. At the same time, it benefits from the historically strong ties developed with two other Scandinavian countries—Sweden and Norway. The upgrading of the Copenhagen airport, which established it as the main airport for the entire Scandinavian region, is crucial in this respect, because it reinforces the function of Denmark as a bridge between the Scandinavian hinterland and the other European economies. This bridge function of Denmark is further enhanced by the linguistic capabilities of the Danes. The Danish language is easily understood by the other Scandinavians and vice versa, and a widely spoken English, generally of a very high standard, further facilitates the integration with the rest of Europe.

#### **Industrial Development**

Transportation within the country and connecting Denmark with the rest of Scandinavia and Western Europe—whether by road, rail, or boat—is still somewhat difficult. However, the plans to build a network of bridges and roads between Sweden and West Germany, crossing Denmark, will solve the current problems and further integrate Denmark with the rest of Europe.

The industrial structure of Denmark consists, to a large extent, of small and very small companies and other organizations. Some 50 percent of all companies are one-man companies, with no further staff than the owner. Companies with one or two employees represent another large category. However, there exists also a nucleus of large companies that play an essential role in the export side of the Danish economy. Among these larger organizations, the government and the government-controlled sector represent a large share. This weight of the government reflects the concept of a welfare state, on which Denmark is based. In contrast to several other welfare state economies, however, the relation between the private sector and the public sector in Denmark appears rather balanced and has not been the subject of major political controversy.

In the past, the Danish economy was directed toward supplying high-quality specialty goods, performing well in terms of income, inflation, and employment. Nevertheless, during 1986 and 1987, the negative aspects of the wealth of the Danish citizens became apparent. The high average income of the Danes had led to a high level of imports; this, in turn, created a very negative trade balance. Up until recently, however, the trade deficit could always be financed on world financial markets, where Denmark could count on a generous confidence of the capital suppliers.

During 1987, the situation further deteriorated. As the trade deficit became even higher and wage negotiations led to high salary increases and inflation, the political base lost its stability because the country was headed by a minority government. Investment, both by private individuals and by corporations, was discouraged and fell sharply.

### GOVERNMENT POLICIES IN DENMARK

#### Intellectual Property Protection

Manufacturers and traders are strongly advised to patent their inventions and register their trademarks in Denmark. Applications should be made through a patent or trademark agent, either in the country of residence or in Denmark. Denmark subscribes to the International and European convention for the Protection of Industrial Property.

##### *Patents*

Patents are granted for a period of 20 years from the date of application. The terms are subject to the payment of renewal fees.

##### *Trademarks*

The first applicant is entitled to registration and exclusive use of a trademark, but a prior user may contest the registration within a period of 5 years. Registrations are granted for 10 years and may be renewed for similar periods. Application for renewal must be made not earlier than one year prior to and not later than six months after expiration of the trademark.

#### Taxation

The principal forms of Danish taxation include the following:

- Corporate income tax
  - Corporate income tax is levied on all companies resident in Denmark, as well as branches of foreign companies, at a flat rate of 50 percent of the taxable income. (Taxable income is equivalent to gross income less allowable deductions.)
  - All income received in Denmark and abroad is liable to taxation in Denmark.
- Personal income tax

- Any individual resident in Denmark is subject to personal income tax, which can consist of various types of taxes subject to income and place of residence.
- The percentage of income tax ranges from 46.0 percent to 73.7 percent, and there are also wealth tax and church tax to be considered.
- Total taxes, however, cannot exceed 78.0 percent of the taxable income.
- Hydrocarbon tax
  - This tax is levied on income in connection with hydrocarbon extraction.
- Value-added tax
  - Value-added tax (meromstningsafgift—MOMS) is levied at 22 percent of the net invoice price for the supply of all goods (both new and second-hand) and services, including gas, water, electricity, and heating.

Other taxes in Denmark include inheritance tax, gift tax, tax on real property, stamp duties, capital contribution duty, stock exchange transfer tax, special excise tax, motor vehicle road tax, and tax on pension funds.

## **INVESTMENT CONSIDERATIONS IN DENMARK**

### **Direct Foreign Investment**

Denmark is an attractive country for direct foreign investment, offering several advantages in the realm of both manufacturing and marketing. For more than a century, Denmark has had a tradition of openness in economic relations with the rest of the world. Foreign investment is allowed without special permit or approval up to a limit of Dkr 10,000,000. Approval for investments above this limit, which is normally granted, must be obtained from the Ministry of Industry.

### **Investment Incentives**

In order to boost Denmark's exports and to decrease the country's unemployment rate, the government offers various incentives that are available on an equal basis to both Danish and foreign-owned companies. These incentives include the following:

- The finance Institute for Industry and Trade A/S (Finansieringsinstituttet for Industri og Hndvrk A/S) grants loans for investments relating to export activities and import-substituting activities in the manufacturing and crafts industries.

- The Danish Export Finance Fund (Dansk Eksportfinansieringsfond) grants loans for major contracts for the export of capital goods and services produced in Denmark.
- The Danish Export Credit Council (Eksportkreditrådet) guarantees loans granted to Danish exporters by banks in order to finance exports.
- The Danish Promotion Council (Eksportfremmerdet) grants financial support for the establishment of new Danish export markets.
- The Fund for Technical and Industrial Development (Teknologistyrelsen) finances research and development projects in Denmark for new products or production methods.
- The Danish International Development Agency (DANIDA) renders financial support for projects of Danish enterprises in developing countries.
- The Ship Credit Fund of Denmark (Skibskreditfonden) offers loans for vessels built in Danish shipyards.
- In order to improve Denmark's development areas, the Danish government has made investment subsidies and investment loans available. Special loans to companies setting up in these development areas are also available from the European Investment Bank.

In addition to these main government incentives, taxes on export subsidies will be removed and extra tax relief will be available for companies participating in international research and development projects. Most of the incentives are designed to improve Danish export competitiveness.

## OTHER BUSINESS CONSIDERATIONS IN DENMARK

### Company Law

The foreign investor will have to choose between two types of company setup: a partnership (public or private) or a branch office. The main differences are in taxation principles. Other differences include the following:

- A/S (Aktieselskab)
  - This style of company, which is a public limited company, requires at least three founders, two of whom must be resident in Denmark or an EC country.

- The minimum capital for such a company is DKr 300,000, which must be paid up before registration.
- ApS (Anpartsselskab)
  - An ApS is a private limited company and requires only one founder.
  - The minimum capital to be paid in is DKr 80,000, and no legal reserve fund is required.
  - This form of organization is preferred by small companies with limited liability.
- Branch office
  - Any foreign company which is registered in its home country may establish a branch in Denmark, although companies resident outside of the EC must first obtain permission from the Danish Ministry of Industry.
  - The branch manager should be a person resident in Denmark or the EC.
  - The registration fee for a branch office is DKr 1,800 plus 0.05 percent of the head office's share capital, which is payable upon registration.

## **BACKGROUND ON FINLAND**

### **General Considerations**

Over the past ten years, Finland has enjoyed continuous economic growth, and 1987 was no exception. Although the agricultural sector suffered a poor harvest due to weather conditions, Finland's gross domestic product (GDP) increased 3.5 percent. It was the good performance of the industrial sector that sustained the growth of the Finnish GDP. The larger corporations such as Neste, Nokia, and Valmet experienced an especially successful year, as is witnessed by the increased exports to the western countries. These more than compensated for the reduced absorption of Finnish products on the part of the U.S.S.R., a factor that affected the performance of the smaller companies sector. The drop of oil prices (evaluated in U.S. dollars) upset the bilateral agreement by reducing the value of Russian oil exports to Finland and, consequently, limiting the country's exports to the U.S.S.R.

### **Strategies for Industrial Development**

Owing to the abundant forest resources and good-quality wood, the wood and paper industry still has a high profile in Finland. Today, however, the metal and engineering



industry holds a 30 percent share; one in three workers is employed in its service. Key products of mechanical engineering include agricultural and forest machinery and equipment; land vehicles; and various types of special ships (such as icebreakers), oil rigs, and so on, often adapted for special conditions.

## GOVERNMENT POLICIES IN FINLAND

Higher corporate investment in R&D appears to be the result of a precise tax reduction strategy adopted by the Finnish government. Recent moves in this direction are strictly connected to the lower presence of socialists in the Parliament and a consequently lower emphasis on public service expenditure and the building up of a welfare state. Another important factor that throws light on the Finnish presence in some developing key markets is the recently established cooperation between higher education and major industrial concerns.

### Trade Policy

Finland joined the European Free Trade Association (EFTA) as an associate member in 1961, becoming a full member on January 1, 1986. The trade agreements between the EC and EFTA allow the free circulation of most goods, but consumables require payment of duties, generally calculated as a percentage of carriage/insurance/freight (CIF).

### Intellectual Property Protection

#### *Patents*

Finland does not subscribe to the European Patent Convention; it joined the International Patent Cooperation Treaty (PCT) in 1980. Manufacturers are strongly advised to patent their inventions and register their trademarks in Finland. Applications are only acceptable in Finnish or Swedish and should be made through a patent or trademark agent, who by law should be resident in Finland.

Patents are granted for a term of 20 years from the date of filing.

#### *Trademarks*

The first applicant may be entitled to a registration, but a prior user may contest it within 5 years from the date of registration. Registration lasts for 10 years and is renewable not earlier than 1 year before or later than 6 months after the expiration date. If a trademark has not been used for 5 years without good reason, it may be cancelled.

## Taxation

Finland's principal taxes are the following:

- Income tax
- Turnover tax
- Equalization tax

### *Income Tax*

Income taxes are levied by the state, by the municipalities, and by the parishes of the Evangelical Lutheran and Orthodox Churches, as shown in Table 6.3-1.

### *Turnover Tax (LVV)*

Finland has not yet adopted the value-added tax (VAT) system. Instead, Finland applies a turnover tax (LVV) of 16.0 percent of the value of the goods, including the tax itself. It is quite complicated, but the effective rate on all imports is 19.5 percent of the gross landed value (i.e., CIF value plus import duty and any other taxes), which is collected by customs on entry. A further 16.0 percent of the difference between wholesale and retail prices is levied at the retail stage.

### *Equalization Tax*

An equalization tax is levied on most imported goods, the aim of which is to prevent imports of countries that do have a VAT system from enjoying a market advantage over domestically produced goods subject to Finnish turnover tax. The level of this tax varies from 1.4 to 6.8 percent of the CIF value.

Table 6.3-1

#### Types of Finnish Income Tax

Tax Type	Amount
National income tax	43.0 percent
Municipal income tax (e.g., Helsinki)	14.0-18.5 percent 15.0 percent
Church income tax (e.g., Helsinki)	1.0-2.0 percent 1.0 percent

Source: Danish Department of Trade and Industry

## INVESTMENT CONSIDERATIONS IN FINLAND

### Direct Foreign Investment

Business in Finland is generally carried out through a local agent, preferably a Finnish national; even with an agent, however, regular visits are essential to maintain goodwill and good contacts in the marketplace. Many Finnish trading companies act as importers, as holding stocks, and as commission agents. Agents, importers, and wholesalers do not tend to specialize to the same extent as in other countries, due mainly to the relatively small population and the large geographical area to be covered. Also, for goods under license, a diversity of goods and suppliers is a useful safeguard for the agent. It should be noted that agents generally work on a hefty commission basis because their expenses can be high. The large size of many Finnish agency companies has natural advantages and disadvantages: Being big means that they can hold large stocks and maintain a staff of technical experts—at the loss of the intimacy that many business ventures prize.

It is possible to operate in Finland without the support of an agent, but probably only in areas where there are few potential customers and stocking and technical sales support are not essential. For success, this policy requires careful attention to visits. English is widely spoken and used in correspondence.

### Investment Incentives

Foreign investment in Finland has contributed significantly to the economic success of the country, and the government encourages direct investment in most areas, notable exceptions being mining and the wood-processing and forestry industries. In matters of tax legislation and economic assistance from the state, foreign enterprises are treated in the same way as Finnish companies. Investment incentives are granted by the Finnish government for companies to penetrate the development areas in the northern and eastern parts of Finland. Incentives include assistance from the Ministry of Trade and Industry, loans from the Regional Development Fund (KERA), transportation subsidies, and tax relief.

## OTHER BUSINESS CONSIDERATIONS IN FINLAND

### Company Law

Most foreign-controlled businesses in Finland are private limited companies, designated OY from the Finnish "osakeyhtio." This is the only corporate form in Finland in which a shareholder's liability is limited. The company can be formed by one or more persons or corporate bodies, and the minimum share capital required is Fmk 15,000.

Other business forms include the general partnership (avoin yhtio), limited partnership (kommandiittiyhtio, or KY), and cooperative societies. A foreign investor may also set up a branch office; however, because these are usually taxed at a higher rate, there is little advantage in doing this.

It is necessary to have permits for foreign-owned enterprises to buy or lease property and to appoint a foreign national as Managing Director. At present, total foreign ownership in Finnish companies may not exceed 20 percent, but plans are in progress to increase this to 40 percent.

All companies must register with the Registrar of Trade in Helsinki.

## **BACKGROUND ON NORWAY**

### **Government Structure**

Norway is a constitutional monarchy with a parliamentary form of government. King Olav V has only symbolic and representative functions as the country's head of state, giving formal approval to government changes recommended to him by the prime minister. The parliament (Storting) consists of an upper house (Lagting) and a lower house (Odelsting), totaling 157 seats. The members are elected in free elections for simultaneous four-year terms and according to a proportional representation system.

The main political parties in Norway are as follows:

- Socialist parties
  - Socialist Left Party
  - Progress Party
- Nonsocialist parties
  - Conservative Party
  - Christian People's Party
  - Centre Party

As in the other Scandinavian countries, the Social Democrats have dominated Norwegian politics. In June 1983, however, a nonsocialist government consisting of three parties was formed under Mr. Kaare Willoch. At the last general election in September

1983, this coalition maintained its power but only as a minority government. In May 1986, the government resigned and was replaced by a minority Labor Party government under Mrs. Gro Harlem Brundtland. The next general election is scheduled for September 1989.

#### **Industrial Development**

The major industries in Norway are oil and gas; shipbuilding and shipping; and the energy-intensive industries such as electrochemistry, electrometallurgy, paper and pulp, and light metals and alloys. The success of the energy-intensive industries results from Norway's development of cheap hydroelectric power.

The Norwegian economy depends very heavily on the oil industry, which contributes almost 20 percent of GDP. Norway is Europe's biggest oil producer after Britain. Because the petroleum business is dependent on international markets, however, it entails high risks. These risks became evident in 1986 when oil prices dropped by more than 50 percent within only a few months, dramatically affecting the Norwegian economy.

### **GOVERNMENT POLICIES IN NORWAY**

#### **Trade Policies**

Norway is a member of EFTA and, like other EFTA member states, has signed a Free Trade Agreement with the EC. Moreover, the country is a contracting party of the GATT, a member of the OECD, the Nordic Council, and, unlike Sweden, also a member of NATO. However, Norway does not allow the prepositioning of nuclear weapons or the stationing of foreign military forces in the country in peacetime.

Norway's economy depends heavily on foreign trade. The country's main trading partners are Sweden, the EC countries (principally West Germany), and the United States. The EC is Norway's most important trade partner, accounting for more than 60 percent of all exports.

#### **Intellectual Property Protection**

Manufacturers and traders are strongly advised to patent their inventions and register their trademarks in Norway. Applications should be made through a patent or trademark agent, either in the country of residence or in Norway. Norway subscribes to the International and European Convention for the Protection of Industrial Property.

### *Patents*

Patents are granted for a period of 17 years from the date of application, subject to the payment of annual renewal fees. If the patented invention is not worked within 3 years of the grant of the patent or 4 years of the date of application, then the patentee may be ordered to grant licenses.

### *Trademarks*

The first applicant is entitled to registration and exclusive use of a trademark for 20 years. It may be renewed for similar periods not earlier than 1 year before or later than 6 months after the expiration date. Any prior user of a trademark may oppose the registration within 5 years.

### **Taxation**

Norway's principal tax systems are as follows:

- **Income tax**—Any person or legal entity resident in Norway for six months or more is liable to income tax on the worldwide income.
- **Value-added tax (VAT)**—Most goods and services are subject to VAT, which is currently 20 percent; for imports, VAT is levied on the duty-paid value plus any additional customs charges.
- **Agricultural levy**—An agricultural levy of 0.3 percent is charged on foodstuffs in addition to the VAT.
- **Stamp duty**—A stamp duty of 17.5 percent is levied on audio, visual, and recording equipment.

Other special taxes are levied on so-called luxury goods (e.g., tobacco, alcohol).

## **INVESTMENT CONSIDERATIONS IN NORWAY**

### **Direct Foreign Investment**

Apart from some exceptions, Norway welcomes direct foreign investment. Excellent opportunities for foreign companies exist in the information technology markets. There is a growing market in Norway for CAD/CAM systems suitable for small and medium-size companies and sophisticated automation systems for the engineering sector.

In most cases, a permit from the Ministry of Industries has to be obtained before a company can be set up in Norway. Preference has to be given to Norwegian labor and materials. Certain sectors that are restricted to foreign investors include basic utilities, armaments and other strategic industries, and government monopolies. Furthermore, the takeover of existing Norwegian firms is not encouraged.

#### **Investment Incentives**

The Norwegian government and the local counties offer investment incentives for companies wishing to set up in Norway's development areas. These areas are the three northern counties of Finnmark, Troms, and Nordland, as well as certain parts of the remaining 12 counties. The incentives include loans and loan guarantees, training and relocation grants, exemption from import duties, and reductions in corporate tax.

### **OTHER BUSINESS CONSIDERATIONS IN NORWAY**

#### **Company Law**

Any company wishing to set up in Norway must register with the Register of Companies in the county where the business office is located. Before deciding on a specific type of company, it is advisable to contact a Norwegian business lawyer. The four types of companies most commonly used by foreign investors are the following:

- Joint stock company (Aksjeselskap, or A/S)
  - The A/S is equivalent to a joint stock company.
  - The minimum amount of share capital for an A/S is NKr 50,000, and at least 50 percent of the directors and the company's manager must have been resident in Norway for more than two years.
  - Each investor is liable for only the amount of the par value of shares owned.
- Limited partnership (Kommandittselskap)
  - A Kommandittselskap is a limited partnership in which at least the general partner has unlimited personal liability and the special partners' liability is limited to a certain amount.
  - The company name has to consist of the name of a general partner and the supplement indicating a partnership.

- General partnership (Det ansvarlige Selskap)
  - This company form is equivalent to a general partnership.
  - In this type of company, each partner is personally liable.
  - The name of the company has to contain the name of at least one of the partners and the supplement to indicate a partnership.
- Branch office
  - A branch office must be duly established under the laws of its home country.
  - A director of the branch office of a joint stock company has the same liability as a director of a Norwegian company.

## BACKGROUND ON SWEDEN

### Government Structure

Sweden is a constitutional monarchy with a parliamentary form of government. King Carl Gustav XVI has only ceremonial functions as head of state. The parliament (Riksdag) consists of one chamber and is the decision-making and legislative body in Sweden. It has 349 members who are directly elected for simultaneous three-year terms according to a proportional representation system. Among the parliament's tasks are the approval of a proposed prime minister, all national taxes, annual budgets, and legislation. The decision-making powers of the parliament are without limitation. The cabinet, which holds the executive power, consists of 20 ministers, 13 of whom head ministries. The ministries prepare the bills for submission to parliament and issue instructions for the administrative boards through which the Swedish government operates. The actual administration is carried out by independent central agencies that are run by civil servants. These civil servants are observed by parliamentary ombudsmen. Other ombudsmen protect the public by observing business practices, consumer rights, ethnic and sex discrimination, and press ethics.

The main political parties in Sweden are the following:

- Nonsocialist parties
  - Moderata Samlingspartiet (Moderate Party)
  - Centerpartiet (Center Party)
  - Folkpartiet (Liberal Party)



- Socialist parties
  - Socialdemokratiska Arbetarepartiet (Social Democratic Party)
  - Vansterpartiet Kommunisterna (Left Party Communists)

#### **Industrial Development**

Sweden is a member of the United Nations and its specialized agencies, the OECD, EFTA, GATT, IMF, IBRD, and the Council of Europe. Moreover, it forms part of the Nordic Council that was founded in 1952 by Sweden, Norway, Denmark, Finland, and Iceland. Due to Sweden's neutrality policy, it is neither a NATO nor an EC member; however, it has a free-trade agreement with the EC for industrial goods.

A quarter of Sweden's total production is exported. The country's main trading partners are the EC countries, led by West Germany; the Scandinavian countries; and the United States. U.S. exports to Sweden grew substantially in 1988, compared with a very low figure in 1987. This growth is mainly due to a weaker U.S. dollar, which is making U.S. products very competitive. The EC is Sweden's most important trade partner, accounting for 50 percent of all exports. Therefore, one of the main concerns for Swedish industrialists is the EC's formation of an internal market in 1992. The chance for Sweden to become an EC member has been ruled out on the grounds of its neutrality; however, discussions are under way for an agreement regarding cooperation in all areas but defense and foreign policy.

Sweden has rich natural supplies of forest, water power, iron ore, uranium, and other minerals. Unlike Norway, however, it lacks resources in oil and coal. These traditional basic industries have run into serious competition from abroad over the past 10 to 20 years. At present, engineering is the largest sector of the Swedish industry, exporting almost 70 percent of its production. This accounts for 45 percent of Sweden's total merchandise exports. Nevertheless, the forest industry is a larger net exporter because its imports are only negligible compared with the engineering industry, which imports 50 percent of its materials.

#### **GOVERNMENT POLICIES IN SWEDEN**

The Swedish government and cooperative societies such as the government holding company Procordia AB own 10 percent of the Swedish business sector, mainly for employment policy reasons. In order to keep the unemployment figure down—Sweden has one of the lowest unemployment figures in the world—the government has consistently spent money on employment services and adult training.

## Intellectual Property Protection

Manufacturers and traders are strongly advised to patent their inventions and register their trademarks in Sweden. Applications for both must be filed with the National Patent and Registration Office, which is controlled by the Department of Commerce.

### *Patents*

Patents are granted for a period of 20 years from the date of application. Patents applied for in any country that is a member of the International Union for Protection of Industrial Property automatically have a one-year right of priority in Sweden. A Nordic patent can be applied for in Sweden, Norway, Denmark, or Finland and applies in all of these countries.

### *Trademarks*

Trademarks are protected by law if they are registered with the National Patent and Registration Office or if they have become established by use. Registrations are granted for 10 years and may be renewed for similar periods.

## Taxation

In Sweden, the National Tax Board (Riksskatteverket) is responsible for the implementation of tax laws and gives advice on tax matters. The total income of corporations and individuals is subject to national and municipal income tax. The Sweden tax system is as follows:

- National income tax (corporation tax)
  - For corporations and economic associations, the rate of national income tax is 52 percent; for other legal persons, it is 40 percent.
- Income tax (physical persons)
  - The national income tax is progressive for physical persons and ranges from 5 percent up to 45 percent.
  - The local income tax is proportional at an average rate of 30 percent; however, the total amount of taxes, cannot exceed 80 percent.
- Value-added tax (MOMS)
  - \* — The rate of value-added tax is 19 percent of the price, including other tax. (So the effective rate is 23.46 percent.)

- It is levied on almost all goods and services.

Additional taxes are levied on items such as tobacco, alcoholic beverages, new cars, motor fuels, and energy.

## **INVESTMENT CONSIDERATIONS IN SWEDEN**

### **Direct Foreign Investment**

In an effort to increase exports, the Swedish government is very anxious to encourage foreign investment and offers several incentives. Strong potential exists in the Swedish market for products such as data processing equipment, electronic components, medical equipment, electronic production and test equipment, computer software, and analytical instrumentation. Furthermore, the restrictions on foreign telecommunications equipment have been relaxed recently. Foreign companies who wish to invest in a Swedish enterprise or establish or acquire a subsidiary company first have to obtain the approval of the Bank of Sweden. The repatriation of capital and the repayment of foreign loans are subject to approval by the Bank of Sweden also. The Swedish government does not permit foreign ownership of Swedish periodicals, banks, credit-status-information operations, and manufacturers of war materials. It restricts foreign ownership of mines, forests, farmland, and property.

### **Investment Incentives**

The Swedish government supports a comprehensive investment incentive program in order to keep the unemployment figure at a low level, to stimulate research and development projects, and to protect the environment. The banks, however, are the main providers of credit to industry. Certain tax incentives are available as well for the development of new businesses in Sweden.

## **OTHER BUSINESS CONSIDERATIONS IN SWEDEN**

### **Company Law**

The foreign investor in Sweden will have to choose one of four types of company organizations: limited company, trading partnership, limited partnership, or branch office. Among these, the limited company (Aktiebolag, or AB) is the most common form of enterprise.

- Limited company (Aktiebolag, or AB)
  - In order to establish an AB, the founder has to be a Swedish resident.
  - An annual appropriation of 10 percent of the limited company's after-tax profit has to be placed in a reserve fund until the fund equals 20 percent of the capital; and a minimum capital investment of SKr 50,000 is required.
- Trading partnership (Handelsbolag)
  - A trading partnership has to be formed by at least two individuals or corporations, with each partner personally liable for the obligations and liabilities of the partnership.
  - Any foreign national (individual or legal entity) has to obtain a special permit from the Swedish authorities before joining a Swedish trading partnership as a partner.
  - The company name must include the term "Handelsbolag."
- Limited partnership (Kommanditbolag)
  - A limited partnership has to be formed by at least two individuals or corporations.
  - At least one partner has to be personally liable for the obligations and debts of the company; however, the remaining partners can limit their liability to their share of invested capital.
  - The restrictions on foreign nationals and company name are the same as for the trading partnership.
- Branch office
  - The establishment of a branch office requires prior approval from the Swedish authorities, and it may not begin operations before registration.
  - Any company wishing to set up a branch office in Sweden has to be properly established and registered in its country of origin.
  - The branch office has to be run by a managing director equipped with a power of attorney; moreover, the managing director has to be a Swedish resident, although not necessarily a Swedish national.

**BUSINESS INFORMATION SOURCES****Denmark**

Table 6.3-2 lists business information sources for Denmark.

**Table 6.3-2****Business Information Sources—Denmark**

<b>Source</b>	<b>Address</b>
B.O.T.B.	EEB Denmark Desk Department of Trade & Industry 1 Victoria Street London SW1H 0ET United Kingdom Tel: 011-44-1-215 7877
Danish Embassy	55 Sloane Street London SW1 United Kingdom Tel: 011-44-1-235 1255
British Embassy	36-40 Kastelsvej DK-2100 Copenhagen Denmark Tel: 011-45-1-264 600
Copenhagen Handelsbank A/S	18 Cannon Street London EC4M 6GB United Kingdom Tel: 011-44-1-236 5000
Danmarks Statistik	Sejrogade 11 DK-2100 Copenhagen Denmark

Source: Dataquest  
April 1989

**Finland**

Table 6.3-3 lists sources of business information for Finland.

**Table 6.3-3****Business Information Sources—Finland**

<b>Agency</b>	<b>Address</b>
Finnish Embassy Trade Centre	30-35 Pall Mall London SW1Y 5LP United Kingdom Tel: 011-44-1-839-7262  Economist: Kai Vuori Tech. Attache: Juha Kasanen
Department of Trade & Industry, Finland Desk	1-19 Victoria Street London SW1H 0ET United Kingdom Tel: 011-44-1-215-4783
British Embassy	Mr. Bates Commercial Section British Embassy Uudenmaankatu 16-20 00120 Helsinki Finland Tel: 011-358-0-647922 Fax: 011-358-0-611747
British Council	Etelaesplanadi 22 A 00130 Helsinki Finland Tel: 011-358-0-640505 (for contacts in universities, education authorities, and cultural institutions)
<b>Publication</b>	<b>Edition</b>
ATLASECO 1987 <i>Financial Times</i>	N/A London Editions, January-May 1988

Source: Dataquest  
April 1989

**Norway**

Table 6.3-4 lists sources of business information for Norway.

**Table 6.3-4****Business Information Sources--Norway**

<b>Agency</b>	<b>Address</b>
B.O.T.B.	EEB Norway Desk Department of Trade and Industry 1 Victoria Street London SW1H 0ET United Kingdom Tel: 011-44-1-215 5140
Norwegian Embassy	Information Department 25 Belgrave Square London SW1X 8QD United Kingdom Tel: 011-44-1-235 7151
British Embassy	Commercial Department Thomas Heftyesgate 8 0264 Oslo 2 Norway Tel: 011-47-2-552400

<b>Publication</b>	<b>Edition</b>
<i>Financial Times</i>	March - May 1988 editions
<i>World Economic Outlook</i> ,	December 1987
WEFA Group	
<i>Business America</i>	April 25, 1988

Source: Dataquest  
April 1989

## Sweden

Business information sources for Sweden are listed in Table 6.3-5.

Table 6.3-5

## Business Information Sources—Sweden

Agency	Address
B.O.T.B.	EBB Scandinavian Desk Department of Trade and Industry 1 Victoria Street London SW1H 0ET United Kingdom Tel: 011-44-1-215 5140/4397
British Embassy	Commercial Department Skarpogatan 6-8 S-115 27 Stockholm Sweden Tel: 011-46-8-670 140
Swedish Embassy	Commercial Department 11 Montagu Place London W1H 2AL United Kingdom Tel: 011-44-1-724 2101
Publication	Edition
<i>Financial Times</i>	March - May 1988 editions
<i>World Economic Outlook</i> ,	December 1987
WEFA Group	
<i>Business America</i>	April 25, 1988

Source: Dataquest  
April 1989



## BUSINESS DEVELOPMENT AND REGULATORY AGENCIES

### Denmark and Finland

No data on engineering-related regulatory agencies in Denmark and Finland are available at this time.

### Norway

The only address of a Norwegian regulatory agency available to us at this time is that of the patent office. It is Patentstyvet (Norwegian Patent Office), P. O. Box 8160 Dep, 0033 Oslo 1, Norway (Tel: 011-47-2-461-900).

### Sweden

For information on regulatory agencies in Sweden, please contact the Institutet for Verkstadsteknisk Forsking (IVF) (Swedish Institute of Production Engineering Research) at one of the following addresses:

- |                                   |                           |
|-----------------------------------|---------------------------|
| • Molndalsvagen 85                | • Brinellvagen 81         |
| 412 85 Gothenburg                 | 100 44 Stockholm          |
| Sweden                            | Sweden                    |
| Contact: Mr Jan Sjorgen           | Contact: Mr Berndt Holmer |
| Tel: 011-46-31-838 600 or 838 692 | Tel: 011-46-8-213 174     |

## STANDARDS ORGANIZATIONS

The agencies listed below provide information on engineering technical standards in Scandinavia.

### Denmark

Information on technical standards for engineering in Denmark can be obtained from Dansk Standardiseringsrad, Aurehoejvej 12, 2900 Hillerup, Denmark (Tel: 011-45-1-623 200).

### Finland

For Finland, information on technical standards can be obtained from the Finnish Electrical Inspectorate (Sahkotarkastuskeskus), Testing Section, P. O. Box 21, 00211 Helsinki, Finland (Tel: 011-358-0-69631).

Testing for electrical safety is required by law in Finland, in regard to equipment for homes, offices, shops, and similar premises.

#### Norway

Two standards organizations to contact in Norway are the Norwegian Standards Association (NSE), Haakon VII gate 2, 0161 Oslo 1, Norway (Tel: 011-47-2-416 820) or the Ministry of Industry, P. O. Box 8014 Dep, 0030 Oslo 1, Norway (Tel: 011-47-2-349 090).

#### Sweden

In Sweden, most domestic electrical appliances must be approved for electrical safety before sale. The address of the Swedish Standards Institution (SIS) is Tegnergatan 11, Box 3295, S-103 66 Stockholm, Sweden (Tel: 011-46-8-230 400).

### CAD/CAM PUBLICATIONS

#### Denmark

CAD/CAM industry developments are covered along with other computer industry topics in the Danish version of *Computerworld*. Its address is Computerworld Danmark A/S, Torvegade 52, 1400 Copenhagen, Denmark (Tel: 011-45-1-955 695).

#### Finland

*Valokyna* is the only magazine specializing in CAD/CAM in Finland. It is published by the CAD/CAM association four times a year. The address is VTT/ATK, Vuorimiehentie 5, 02150 Espoo, Finland (Contact: Mr Pirjo Lehtinen).

#### Norway

No specialized CAD/CAM trade journals are published in Norway, but the following leading engineering journals publish articles on the subject:

- Ingenior Nytt  
Hovfaret 17  
0275 Oslo 2  
Norway
- Teknisk Ukeblad  
Kronprinsensgt 17  
0251 Oslo 2  
Norway

### Sweden

Table 6.3-6 lists technical publications that cover general computer-industry information, including developments in CAD/CAM.

**Table 6.3-6**  
**Technical Publications—Sweden**

<b>Title</b>	<b>Address</b>
<i>Computer Sweden</i>	Södra Hamnvagen 22 115 41 Stockholm Sweden
<i>Datavärlden</i>	Box 3188 103 63 Stockholm Sweden
<i>Datornytt</i>	Box 200 172 25 Sundbyberg Sweden
<i>Elektronik Världen</i>	Box 23 371 21 Karlskrona Sweden
<i>Elteknik</i>	Box 27 315 102 54 Stockholm Sweden
<i>Industriell Datateknik</i>	Box 27 315 102 54 Stockholm Sweden
<i>Modern Elektronik</i>	Box 200 172 25 Sundbyberg Sweden

Source: Dataquest  
April 1989

## TRADE FAIRS

### Denmark

Danish trade fairs are listed in Table 6.3-7. For more details and information on the dates of these exhibitions, please contact Industries Board of Trade Fairs, Kobmagergade 67, DK-1150 Copenhagen, Denmark (Tel: 011-45-1-144 346).

### Finland

The Helsinki International Fair Center is the only permanent fair complex for exhibitions in Finland. It is at Pasila, approximately 3 miles from the center of Helsinki, and has a floor area of 35,000 square meters. Events there are organized by the Finnish Fair Corporation, Helsinki Fair Center, Rautatielaisenkatu 3, P. O. Box 21, 00521 Helsinki, Finland (Tel: 011-358-0-150 91, Fax: 011-358-0-142 358).

Table 6.3-7

#### Trade Fairs—Denmark

Trade Fair	Month	Address
Mikrodata	February	Bella Center A/S Center Boulevard DK-2300 Copenhagen Denmark  Tel: 011-45-1-518 811
Elektronik	May	Bella Center Denmark
Computer & Office	September	Messecenter Herning DK-7400 Herning Denmark  Tel: 011-45-7-126 000
Automatik	October	Bella Center Denmark

Source: Dataquest  
April 1989

The Finnish Fair Corporation organizes the following specialist fairs at regular intervals:

- FINN TEC—technical fair, annual
- KT—business machines and equipment, biannual
- HEPAC—heating, plumbing and air conditioning, every four years
- ELKOM—professional electronics, biannual

#### Norway

Norway has only one exhibition that specializes in CAD/CAM; it is called DAK/DAP. DAK/DAP will be held from November 8 through 11, 1988. The address of the fair organizers is: Messebyret A/S, Sandviksveien 184, 1301 Sandvika, Norway.

#### Sweden

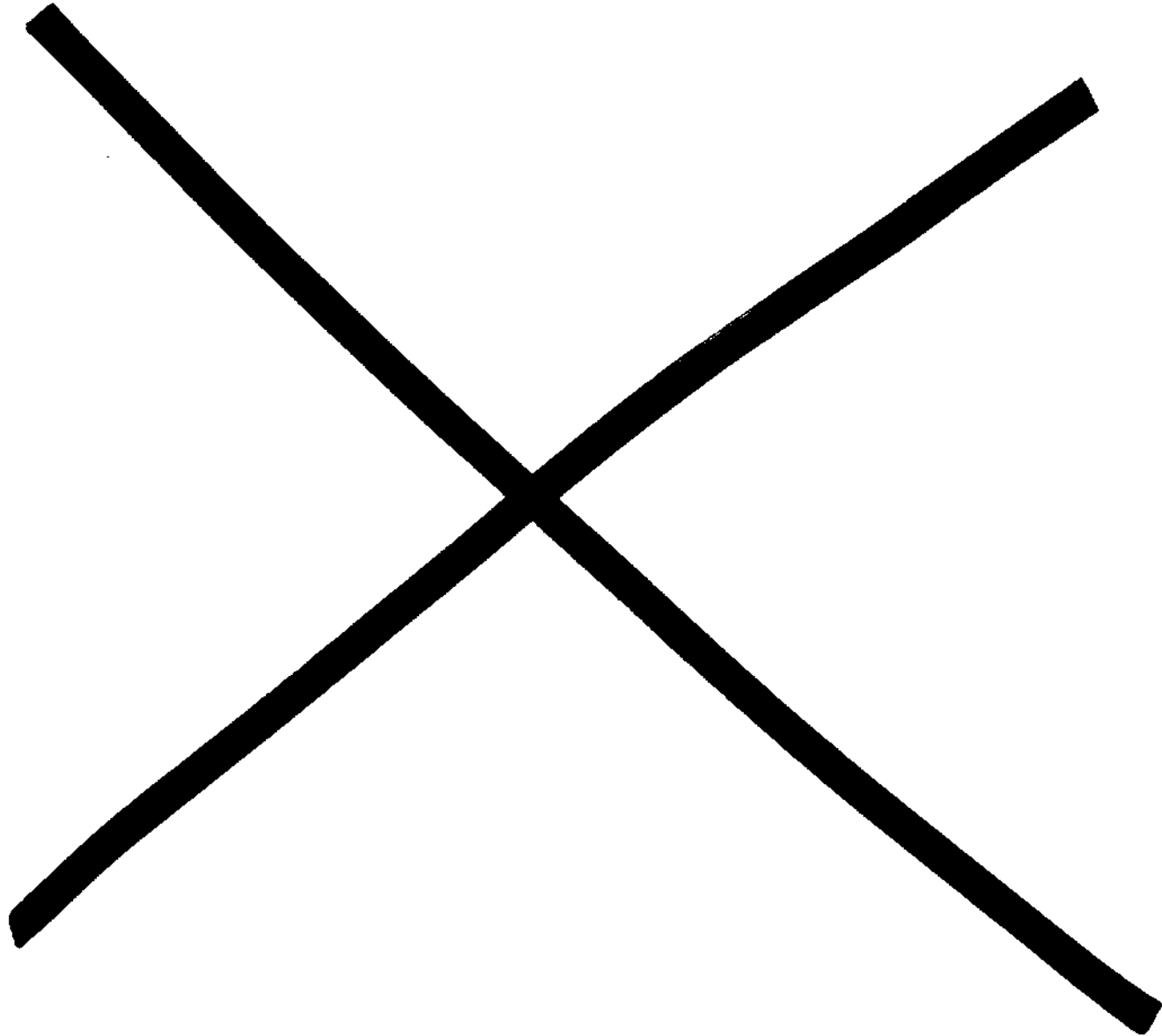
Table 6.3-8 lists the trade fairs in Sweden. For more details and information on the dates of the Swedish trade fairs, please contact one of the following:

- Stockholmsmassan  
5-125 80 Stockholm  
Sweden  
Tel: 011-46-8-468 749
- Malmo Massan  
P. O. Box 19015  
200 73 Malmo  
Sweden  
Tel: 011-46-40-80030
- Svenska Massan Goteborg  
P. O. Box 5222  
402 24 Gothenburg  
Sweden  
Tel: 011-46-31-109 100

**Table 6.3-8**  
**Trade Fairs—Sweden**

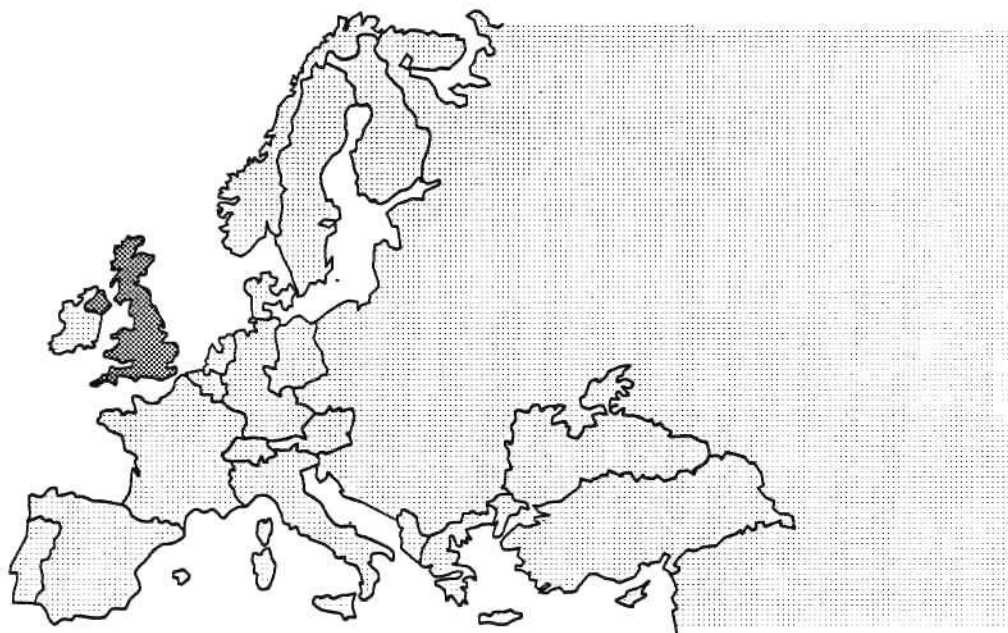
<b>Trade Fair</b>	<b>Industry</b>	<b>Time of Year</b>	<b>Location</b>
Malmö Tekniska Massa	Tools, industrial robots, electronics	March	Malmö
CIM	Computer-integrated manufacturing	April	Stockholm
Software	General software	April	Stockholm
IBM Systems Scandinavia	N/A	May	Stockholm
Verktöymaskiner	Mechanical engineering	May	Gothenburg
INTEREX	International Assoc. of Hewlett-Packard computer users	June	Gothenburg
Stockholm Tech. Fair	Computer and office	October	Stockholm
SCANAUTOMATIC	Industrial automation	November	Gothenburg

Source: Dataquest  
 April 1989



## 7.1 Geography and Demographics

### United Kingdom



Country Statistics		CAD/CAM-Related Data	
Total population (millions)	56.76	1988 Market size	
Area (square kilometers)	244,046	Revenue (millions)	\$683
Population density	233:1	Workstations shipped	13,238
		Installed base	41,397
Trade balance (US\$-billions)	(24.7)	<b>1988 Revenue Mix by Application</b>	
1988 GDP (1980 US\$-billions)	648.2		
1988 GDP (£-billions)	446.2	<div> <div>MCAD 58%</div> <div>AEC 15%</div> <div>Mapping 6%</div> <div>EDA 21%</div> </div>	
1989 real GDP growth rate(% est.)	2.7		
Structure of production (% 1985 GDP)		<div>N/A = Not Available</div>	
Agriculture	2		
Industry	36		
(Manufacturing = 22%)			
Service	62		
1988 Exchange rate (£/US\$)	0.56		
1988 Unemployment rate (%)	8.3		
Total engineers	533,400		
Electrical/electronic	120,000		
Mechanical	140,300		
Chemical/biological	N/A		
Metallurgical/materials	N/A		
Civil/architectural	67,700		
Others	205,400		

0003841-1

Source: U.S. Department of Commerce  
1988 Statistical Yearbook (UNESCO)  
The WEFA Group  
Dataquest  
April 1989



## **7.2 Government, Trade, and Economic Forces**

### **EXECUTIVE OVERVIEW: UNITED KINGDOM**

The following summary highlights this region's major economic and political developments of 1988, and presents 1989 economic projections. It is based on reports from The WEFA Group (Wharton Econometric Forecasting Associates).

- Output in the United Kingdom continued its rapid expansion in 1988. The third-quarter GDP (output) index topped 5 percent growth, led by manufacturing with a 6.9 percent jump. GDP growth for the entire year was roughly equivalent to that in 1987—approximately 4 percent.
- The main factor behind this continued growth is a consumer boom—a sharp 6 percent rise in domestic demand—coupled with an investment boom in which the growth rate has been even higher.
- Signs that the U.K. economy may be overheating can be seen in creeping inflation figures and rapid import growth.
- Despite current account deficits, the pound has remained strong, bolstered by the government's commitment to exchange rate stability and by wide interest rate differentials.
- The 3 percent growth forecast for 1989 largely depends on how effective the recent rises in interest rates are in slowing consumer spending. This level of growth should bring about a gradual improvement in the U.K.'s current account.

## **7.3 Doing Business in the United Kingdom**

### **BACKGROUND ON THE UNITED KINGDOM**

#### **General Considerations**

The United Kingdom has been going through a painful process for the last eight years, attempting to transform itself from a protected welfare state to a nation with an economy led by high-technology industries. Policies of support grants, government subsidization, restrictive trade union practices, and ailing industries have all helped to weaken the United Kingdom's position in global world markets.

On the one hand, a good share of traditional U.K. industries have deteriorated (e.g., coal, steel, and shipbuilding), with a consequent increase in unemployment. The United Kingdom now has one of the highest rates of unemployment in the world. Furthermore, these employment problems are magnified by regional differences, with higher unemployment found in the poorly industrialized northern regions.

On the other hand, the United Kingdom has continued strength in the financial and service industries. Indeed, this backbone of the economy helped finance the small but powerful kernel of high-technology companies that empower the country today. This same financial base also underlies the fact that the United Kingdom has one of the highest installed bases of computer equipment in Europe.

#### **Strategy for Industrial Development**

In the 1980s, industrial growth in the United Kingdom has been characterized by the phasing out of the old world—the steel and coal industries—and the phasing in of a new world of high-technology industries. This change brought about two concurrent labor problems: an increase in the level of unemployed, unskilled workers and a lack of highly trained, skilled specialists for the high-technology industries.

For the most part, the U.K. government has devoted its attention to solving the “high-tech” knowledge gap, the chief vehicle being the offer of employee retraining programs. A recent study by the United Kingdom's Department of Employment showed that 10 percent of the employed were undergoing some form of job-related training. Radical changes in the U.K. labor force are reflected in recent government statistics showing that unionism, the traditional organization of the blue-collar class, decreased by twofold in four years.

The current government is credited with propelling the United Kingdom out of the economic stagnation of the 1970s and early 1980s—principally through its strategy of

improving the supply side of the economy. The chief reforms that have contributed to this economic upswing are the following:

- Reform of trade union laws
- Privatization
- Encouragement of high-technology industry sectors

With the drive toward high technology, particular concern has arisen over the shortage of software engineers. Although this problem has eased somewhat since its recognition in the early 1980s, the industry itself continues to correct it by contributing to employee training. Recently, the Engineering Industry Training Board launched an on-the-job diploma to encourage companies that are educating their employees in this area. Retraining programs are, for the most part, subsidized by industry. The political opponents of the current Tory government have not missed the opportunity to point out the government's failure to provide equal relief to the employment problems of the unskilled.

In effect, the recent government policies have passed greater control to industry management, allowing it to adapt more quickly to changing global market variables. To a great extent, industries in the United Kingdom attribute the economic turn to the phasing in of high-technology industries; therefore, there are several indications that industry is channeling its resources to leverage this strength. For instance, investment in new capital equipment has a higher technology content than in the past. Moreover, despite the unemployment problems, industry continues to invest in manufacturing automation at the expense of job loss.

The two principal concerns of British industrialists regard government policies on currency and inflation. In particular, the Confederation of British Industry has voiced concern that the rise of the pound against both the dollar and the deutsche mark threatens the competitiveness of U.K. exports. Independent economic forecasters believe that the current government, with its main objective being to avoid domestic inflation, is willing to risk the United Kingdom's trade position.

Two conflicting needs exist: to correct the problems of the large population of unskilled, unemployed workers and to leverage the hidden strengths of the small, technically skilled worker population. This conflict is evident in recent debates between the incumbent Conservative government and the Labor Party over tax policy. (See this section's discussion of taxation.)

Despite its internal problems, it should be remembered that real economic growth in the United Kingdom has been consistently higher than in most other European nations over the past five years. However, there are several signs on the British economic landscape that bear watching. Most prominent is the deficit in the current balance of payments. This debt, viewed alongside the possibility of rising inflation, could result in increased interest rates. In turn, this could well suppress the domestic demand for foreign imports.

## GOVERNMENT POLICIES

Nominally, the United Kingdom is considered a constitutional monarchy; however, the Crown rules symbolically. Legislative power lies with the parliament and the cabinet, which is headed by the prime minister. Although Northern Ireland, too, has an independent parliament, it defers to the parliament of the United Kingdom on a wide range of legislative and fiscal powers—namely, those relating to foreign policy, trade, war, the armed forces, and most matters of taxation.

### Monetary Policy

Prime Minister Margaret Thatcher's Tory government maintains consistent economic policies based on generally tight monetary and fiscal policies. In the past years, these policies have ignited economic growth and raised British consumer spending, with the government setting forth to channel the increasing domestic demand to domestic goods. In 1986, consumer debt rose 18 percent over 1985; however, this chiefly reflects the surge in demand for Britain's imports, up 9.2 percent from 1986.

The U.K. government's primary objective has been to avoid inflation at all costs. Current policy seems to indicate that the government is more interested in stabilizing exchange rates and sees the value of the pound against the dollar, whether high or low, as independent of this objective. Since early 1987, the government's policy has been to force the pound sterling to shadow the European Monetary System (EMS). In general, this policy has had mixed results in stabilizing the pound from advancing against the West German deutsche mark, an important point in terms of maintaining U.K. export trade competitiveness against other European countries.

In 1986, inflation in the United Kingdom was 3.5 percent, well above that of Britain's main competitors. Inflation rates have been creeping up since then, reaching more than 4 percent in 1987. The inflation rate rose close to 5 percent by the end of 1988.

### Employment Policy

Unemployment continues to be a major problem for the United Kingdom, affecting almost 12 percent of the potential labor force. While the country has an opportunity to respond to this by increased export activity (hence, more jobs), there is the complicating problem of high labor costs. Unit labor costs in the United Kingdom rise faster than in most other countries, at an annual rate of about 5 percent.

In the past three years, the government has invested more in job training and employment aids to correct this problem. For instance, in 1986, the government began the Restart program followed by the Youth Training Scheme (YTS), both of which provide job interviews for the long-term unemployed.

#### Government R&D Projects

The performance of research and development (R&D) in the United Kingdom is weakened by insufficient support from both the government and industry. In 1987, the U.K. government budget for civil and military R&D was 2.8 percent of the GDP, falling behind both of its main European competitors—France and West Germany.

Industry spending for R&D is low as well. In 1986, industry provided 30 percent of the total R&D spending of £6.6 billion. This compares with 50 percent in the United States and 60 percent in both West Germany and Japan. To correct this imbalance, government and industry have teamed together on several projects. A partial list of these projects and brief descriptions of their activities follow:

- **New and Improved Technology Initiative (NIMTECH)**
  - Supported by the government and universities, NIMTECH's core group is formed from 14 of Britain's leading companies (among them British Aerospace, BICC, British Telecom, Ferranti, GEC, ICI, and Mullard).
  - NIMTECH's chief objective is to identify small businesses developing new technologies so that large companies can provide venture capital; in addition, small companies are identified to provide contract work for the larger ones.
- **Project Link**
  - Link is a £420 million science research scheme, designed to link collaborations between university research and science-based industry.
  - The program is aimed at a broad spectrum of technology areas.
- **Professional, Industrial, and Commercial Updating program (PICKUP)**
  - The main objective of PICKUP is to channel university-trained people into industry.
  - As part of this program, nine technology centers were established in 1987, each receiving up to £100,000 to set up.
  - While a wide umbrella of technology is covered, government support is particularly interested in CAD/CAM development projects.
- **Eureka incentives**
  - To encourage participation in the Eureka projects, the United Kingdom offered several forms of support, starting in 1986.

- Companies involved in Eureka projects can apply to the DTI for up to half their research costs and 25 percent of their development costs.

The following two major organizations support industry-related research in the United Kingdom:

- The Department of Trade and Industry (DTI)
- Science and Engineering Research Council (SERC)

DTI principally supports industry projects and SERC supports academic researchers. Recently, DTI formed an umbrella organization with SERC to oversee all electronics-related research. The goal is to strengthen links between industry and academia, with SERC promoting the downflow of academic research into industry and DTI encouraging high-technology research by companies.

Collaborations with other European countries are on the rise in both civilian and defense research. In civilian research, the United Kingdom is active in several high-technology consortia: X/Open, OSI, and Esprit. Recently, the United Kingdom has joined the Trigat development program, a joint effort of France and West Germany to develop a new antitank guided weapon system for the mid-1990s. The three countries will be equal partners, and the prime contractor will be a Paris-based consortium called Euromissile Dynamics Group. This consortium is composed of British Aerospace, France's Aerospatiale, and West Germany's Messerschmidt Bolow-Blohm. (It should be noted that the Eurotunnel, a project to provide an underwater tunnel connecting the United Kingdom and France, is not government sponsored.)

## Trade and Economic Policies

### *Trade Policy*

For the most part, the United Kingdom maintains a liberal trading policy. For instance, along with Belgium, the Irish Republic, and The Netherlands, Britain allows foreign shipping companies the full right to pick up and deliver goods between ports on its coastline. This is in contrast to several of the Mediterranean countries (Greece, Italy, and Spain) where such cabotage is restricted or completely barred. Even France and West Germany have partial restrictions.

### *Tariff Structure*

The United Kingdom has been a member of the Economic Community (EC) since 1973, and, as such, was required to align its tariff structure with the EC. As part of the EC's open trade policy, all trade, including British exports of industrial goods to and imports from other EC nations, are duty free. Also included in the zero-duty zone are

member nations of the EFTA (European Free Trade Association). In contrast, the imports of non-EC members, such as the United States and Japan, are subject to the EC's Common External Tariff (CXT).

#### *Basis of Duty Assessment*

For the most part, British levies on imports are assessed on an ad valorem basis. This means that the value is determined as the usual price of the goods at the time of importation. The price includes freight, insurance, commission, and all other costs, charges, and expenses incidental to the sale and delivery of the goods to the buyer (taxes excluded). Import duties are payable in British currency, with the exchange rate determined at the current U.K. selling rate at the time the goods are entered for consumption.

#### *Value-Added Tax*

The standard current rate of the United Kingdom's value-added tax (VAT), levied on nearly all high-technology import items, is 15 percent. The tax is assessed on the basis of the c.i.f. duty-paid value of the goods. Books (hence, computer documentation) are not subject to the VAT.

Small businesses are accorded some benefits, having no liability to pay VAT until payment for goods is received.

#### *Import Controls*

For high-technology items (both hardware and software), no licensing controls are imposed on imports from the United States and other free-world nations.

#### **Intellectual Property Protection**

As a member of the Paris Union International Convention for the Protection of Industrial Property, the United Kingdom provides protection for patents and designs. Applications for patents and other forms of design protection should be filed with the U.K. patent office. The following paragraphs briefly describe the specifics of U.K. design protection.

#### *Patents*

Under U.K. law, the basic patent is issued for a period of 16 years from the date of application. It is extendible for 5- to 10-year periods when the patentee has not been adequately remunerated. The patentee is required to apply the invention commercially within 3 years or a compulsory license must be ordered. However, the patentee may grant "licenses of right" to use the patent for receipt of royalties.

### *Copyrights*

Since both the United Kingdom and the United States signed the Universal Copyright Convention, copyright protection extends to either country in which the copyright is filed.

Recently, the House of Commons put forth a bill to restructure the Copyright Law, with special provisions to protect computer software copyrights. One of the issues under debate with the so-called Copyrights, Designs, and Patent Bill is the bill's creation of a rental right—giving copyright owners exclusive rights over their work for 12 months, then allowing others to pay royalties to rent them out without permission. Currently, the bill is under discussion, particularly with regard to what period of time is sufficient to protect the creator's rights, without stifling the transfer to commercial enterprises.

### *Trademarks*

Trademarks are registered for 7 years from the date of application and are renewable for 14-year periods.

### *Industrial Design*

From the date the application is filed, industrial designs are protected for five years and are renewable for two terms of five years each.

### **Taxation**

Taxation in the United Kingdom may be assessed on income, capital, or expenditure. Income tax is charged on all income of residents of the United Kingdom as well as nonresidents whose income arises in the United Kingdom. In the revised March 1987 budget, the basic rate of income tax was reduced from 29 percent to 27 percent.

The corporation tax is charged on all company profits from all sources. The current rate is 35 percent for large companies and 27 percent for small companies.

Introduced by the Finance Act of 1975, the capital gains tax is charged at 52 percent. Only persons resident or carrying on business in the United Kingdom are subject to this tax.

### *Tax Concessions*

As a complement to investment incentives, certain tax concessions have been made such that the cost of equipment not covered by the grants can be deducted from corporation tax.

In addition, the United States and the United Kingdom have signed the "United States-United Kingdom Double Tax Treaty." Briefly stated, this treaty allows that



income from one country is exempt from taxation if the recipient is already taxed for the income in another country.

#### *Recent Tax Developments*

The tax burden in the United Kingdom has been raised in real terms by 15 percent since 1979. Recently, a bill has been introduced in the House of Commons to radically restructure the tax system. Instead of the current flat rate of taxation, the proposal envisions a 25 percent basic tax rate and a single 40 percent higher rate. On the one hand, the Labor Party has been particularly active on this because of the increased tax burden on low-income households. On the other hand, the government remains concerned that no disincentives are delved out to corporate management. Nonetheless, it is anticipated that the government will continue its supply-side incentives by providing tax reductions.

## **THE UNITED KINGDOM'S FOREIGN RELATIONSHIPS**

### **Relationship to the United States**

The United States and United Kingdom enjoy close trading ties, with the trade balance traditionally in the United Kingdom's favor. In 1986, the United Kingdom was the fifth largest purchaser of U.S. goods and services in the world. This figure must be revised upward, however, given that U.S. exports to the United Kingdom rose 24 percent to a record level of \$14 billion in 1987. (However, U.K. trade figures were somewhat confused for 1987, due to the strike by the customs and excise officials in spring 1987.)

The U.S. export trade improvements were chiefly due to the dollar's decline against the pound sterling. In 1986, the dollar traded at \$1.55 to the pound. In the second quarter of 1988, the dollar slipped further and was trading at \$1.85 to the pound.

The United Kingdom's major imports from the United States in 1986 were:

- Petroleum and petroleum products
- Automobiles and auto parts accessories
- Jet aircraft and parts
- Specialized industrial machinery

Leading exports to the United States in 1986 were:

- Office machines and data processing equipment
- Electrical machinery

- Scientific and control instruments
- Power generating machinery
- Specialized industrial machinery

### **Relationship to Other Countries**

The major European import-trade partners of the United Kingdom are West Germany, France, and The Netherlands. In 1987, West Germany posted a 16.8 percent share of the U.K. import market, with France (9 percent) and The Netherlands (7.6 percent) in front of the United States (just slightly less than 7 percent).

The future of U.K. economic expansion is, like most of the major industrial economies, very much dependent on overseas demand and international competitiveness. Even with high demand, however, the flexibility of the government to position the currency for future trade advantage may be constrained by the necessity to handle the budget deficit.

## **INVESTMENT CONSIDERATIONS**

### **Direct Foreign Investment**

Although the United Kingdom admits foreign investment, its priorities center around strengthening its domestic industries. Nonetheless, U.K. company laws and regulations do not discriminate between nationals and foreigners. Domestic as well as foreign companies are subject to the same controls over plant location. Moreover, approval of foreign investment by the British exchange control authorities is usually granted freely. In particular, a foreign individual corporation establishing a British subsidiary will find no special requirements placed on directors and shareholders.

For foreign and domestic companies alike, the United Kingdom does encourage their location in less developed areas (e.g., Northern England, Scotland, and most of Wales and Northern Ireland). The government discourages companies from locating in heavily populated, industrialized sectors (e.g., the Midlands and Southeast England).

The United States and the United Kingdom invest directly in each other's economies on a large scale. Total U.S. investment in the United Kingdom at the end of 1986 was an extraordinary \$38 billion; of that amount, \$15 billion went to Great Britain.

In terms of U.S. exports, the United Kingdom is primarily interested in high-technology. One-half of all U.S. sales into the United Kingdom fall into the category of high-technology electronics. The U.S. Department of Commerce, through the U.S.

Embassy in London, has identified a number of key industrial sectors for foreign exporters. Those of particular interest to the CAD/CAM industry are:

- Electronic components and production and test equipment
- Computers, peripherals, and software
- Industrial and process controls

#### *Electronic Components and Production and Test Equipment*

Relevant to electronic design automation are the electronic component and production and test equipment markets, with much of these products ultimately feeding into system design. The 1986 components market in the United Kingdom was valued at \$5.5 billion, and 60 percent of these components were imported. Obviously, the nationality of electronic components determines the kind of component libraries needed by designers—an indirect but, nonetheless, real driver of EDA software requirements. In this regard, the United States claims a 40 percent share of imports; its nearest rival, Japan, claims a 25 percent share of the import market.

What types of designs were these components used in? In early 1986, much of these were applied to personal computer design; however, this application has fallen off somewhat. Nevertheless, the traditional consumers (potential end users of EDA tools) remain. They are computers; telecommunications; and the military, industrial, and consumer electronic product areas.

In the related electronic production and test equipment industry, the U.K. market has been estimated at some \$1.2 billion. Imports account for more than half the market, with the United States and Japan as the major suppliers.

#### *Computers, Peripherals, and Software*

The U.K. market for all computer equipment reached \$5 billion in 1986. This corresponds to a healthy 15 percent growth—a rate that is expected to continue.

The International Trade Administration has singled out CAD/CAM software, an area where U.S. vendors are dominant, as another area of high demand. CAD/CAM vendors should also be alerted that there is tremendous demand for high-performance output devices and mass storage, including optical disks.

#### *Industrial and Process Controls*

With the drive toward factory automation, CAD/CAM vendors worldwide are establishing increasing links to manufacturing automation. Thus, the industrial control market is a complementary industry that can impact CAD/CAM buying decisions.

The market for industrial control equipment in the United Kingdom has been estimated to stand at about \$2.8 million, with approximately 20 percent annual growth projected. Imports constitute about 60 percent of this market. According to the International Trade Administration, approximately 25 percent of these systems are subsequently incorporated into systems and exported by the major British engineering and construction companies. Although U.S. companies have held the technological edge in this area, West German and Japanese imports have begun to invade this territory recently.

### **Investment Incentives**

To encourage both foreign and domestic investment, the United Kingdom offers a number of investment incentives. These investment incentives fall into the following categories:

- Economic incentives
- Tax incentives
- National incentives
- Regional incentives
- Finance incentives

### *Economic Incentives*

As with any EC-based manufacturing site, any foreign investor who manufactures goods in the United Kingdom inherits the duty-free tariff advantages of the EC. Furthermore, producers of defense-related equipment from NATO countries inherit special NATO-based advantages. Finally, goods manufactured in the United Kingdom for export to other member nations of the British Commonwealth receive special privileges.

### *Tax Incentives*

As a result of the extended recessionary period in the mid-1970s to early 1980s, the United Kingdom offers some very hospitable tax incentives, principally regarding capital equipment expenses. For instance, machinery, plant, and equipment expenses are 100 percent deductible in the year the expense is incurred. Expenditures on industrial buildings can be written off by 79 percent in the first year and 4 percent thereafter. All capital expenditure on R&D projects can be written off in the first year. Some additional provisions are particularly beneficial to start-up companies. For example, if profits are

insufficient to absorb the tax allowances, the tax credits can be carried forward indefinitely, applied to other profits, or carried back against prior-year income. The net effect of all this is that a growing company could, in effect, pay no taxes as long as it continued to grow.

#### *National Incentives*

The U.K. Department of Industry gives grants to industrial-sector companies that will increase the industrial competitiveness of the United Kingdom. There are two primary classes of these grants. One class of grants is based on investment in certain industries, and one is based on investment in certain locations.

The first class of grants encourages product development in specific high-technology industry sectors. These include projects directly related to computer-integrated manufacturing (CIM) and indirectly related to CAD/CAM. The specific projects under which grants are awarded include the following:

- Product and Process Development Scheme
- Software Product Scheme
- Microelectronics Support Program
- Microprocessor Application Project
- Government Support for Industrial Robots

#### *Regional Incentives*

The second class of grants is slated for companies that locate in industrially weak regions. These grants are funds earmarked for capital expenditures on buildings, plants, and machinery. High-technology companies are particularly encouraged. No rates are set for these grants. Rather, each grant is individually tailored to a company by the government. The highest level of incentives of this kind are in Northern Ireland.

In addition, there are 11 so-called "enterprise zones." These zones are areas in which a company is exempt from certain tax burdens (e.g., development land tax, property tax).

#### *Financial Incentives*

Britain no longer has any exchange controls allowing profits, dividends, and capital to be remitted abroad without restriction.

## OTHER BUSINESS CONSIDERATIONS

### Corporate Law

Under the corporate laws of the United Kingdom, there are three types of business organizations that may be registered:

- A partnership
- A private limited company
- A public company

In addition, foreign businesses may be conducted as branches or subsidiaries. All forms of business organization must be registered with the Companies Registration Office of the Department of Industry. The following paragraphs briefly describe each business organization.

#### *A Partnership*

The partnership is limited to 20 members and has unlimited liability that extends to all private assets of its partners. One advantage to a limited partnership is that the liability is limited by the individual contributions of the members. However, the business can be run only by partners with unlimited liability.

#### *A Private Limited Company*

Membership in a private limited company is restricted to between 2 and 50 people. This form of business must file its accounts with the Department of Industry, where they are available for public inspection. Such a company is not subject to inspection if it has an incorporated member or company on its board of directors.

#### *A Public Company*

British public companies must have a minimum of 7 members and, like their U.S. counterparts, may offer shares and debentures to the public. When quoted on the stock exchange, the transfer of these shares and debentures cannot be restricted.

A public company is formed by filing two documents: a memorandum of association and an article of association. The memorandum of association is essentially a company charter, and the article of association provides a draft of the business organization, shareholding practices, and accounting procedures of the company.

#### *A Branch*

A company that establishes a branch in the United Kingdom must record its current organization and activities, including those of its non-British portion. However, government approval is not required before opening a branch; moreover, the company need not maintain a specified minimum of capital to retain the branch.

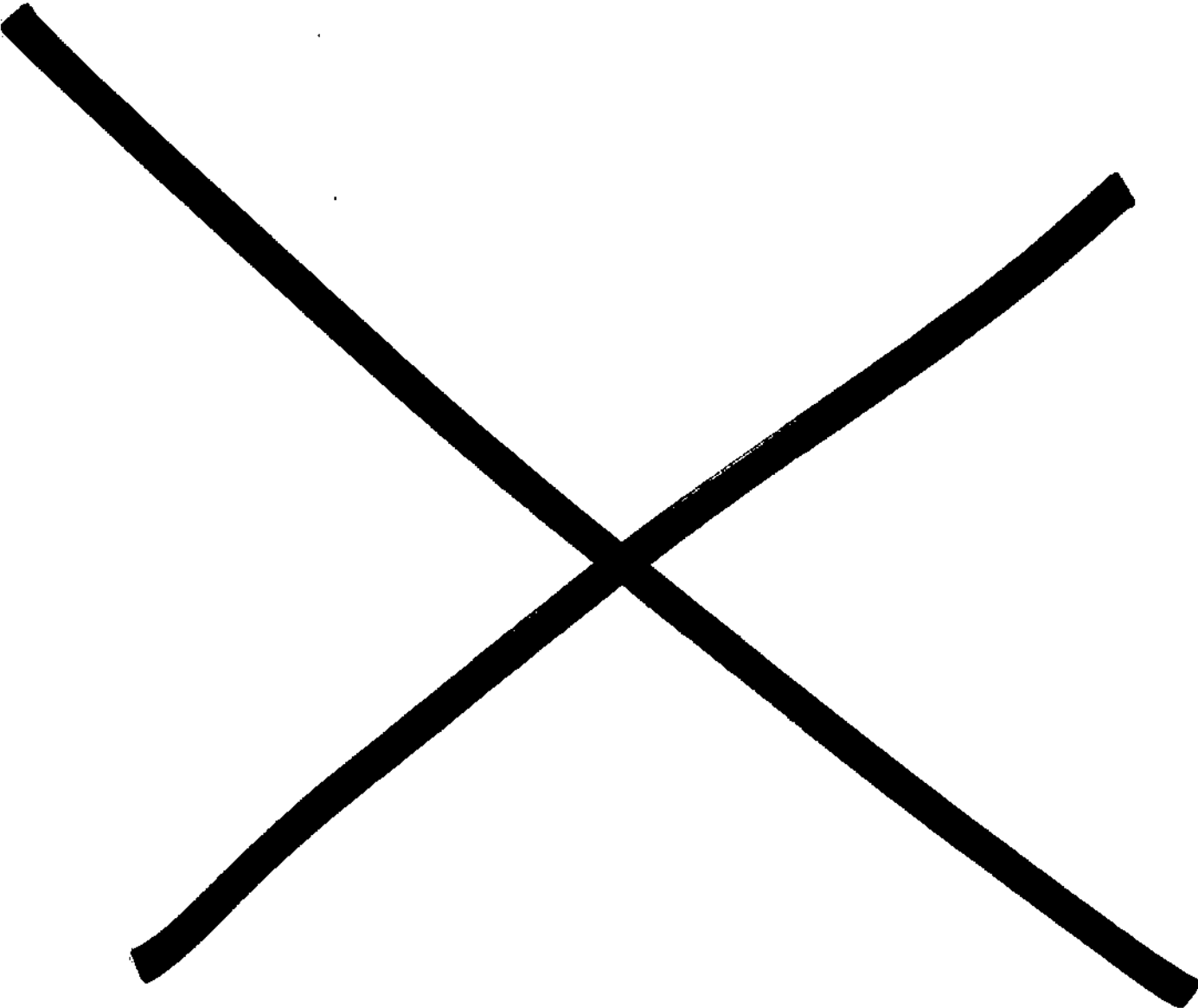
#### *A Subsidiary*

Regarded as a separate legal entity, the subsidiary provides a business organization that allows a foreign company the privacy of not disclosing its assets. Most U.S. enterprises adopt this form of business.

Recently, the Inland Revenue has been reexamining the tax structure of foreign subsidiaries in the United Kingdom. It has observed that some companies bypass U.S. taxes by financing their subsidiaries with debt. Because U.K. tax law provides that interest payments on debt are tax-deductible, this effectively allows profits to be transferred overseas untaxed. The U.K. tax experts are currently debating whether some of this debt should be redefined as equity for tax purposes. However, opponents of this tax reform argue that this move could well discourage direct investment in the United Kingdom.

#### **Venture Capital**

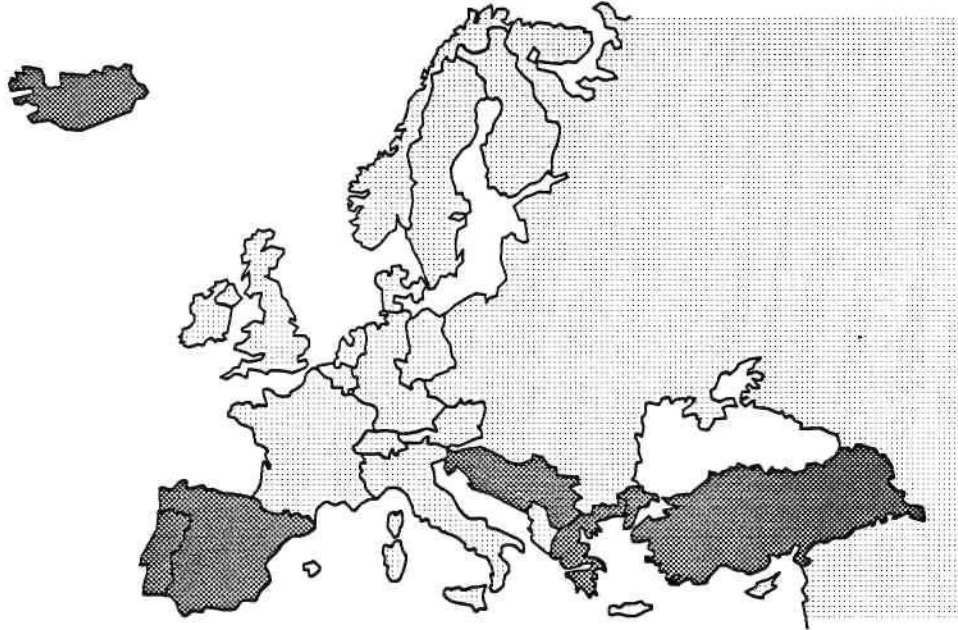
In association with the United Kingdom's major financial institutions, its venture capital industry is the largest in the EC. The United Kingdom channels 69 percent of its gross domestic product into venture capital. U.K. venture capitalists are extremely adverse to risk, however, and the lion's share of venture capital is going to management buy-outs of large established ventures with no technology risk.





## 8.1 Geography and Demographics

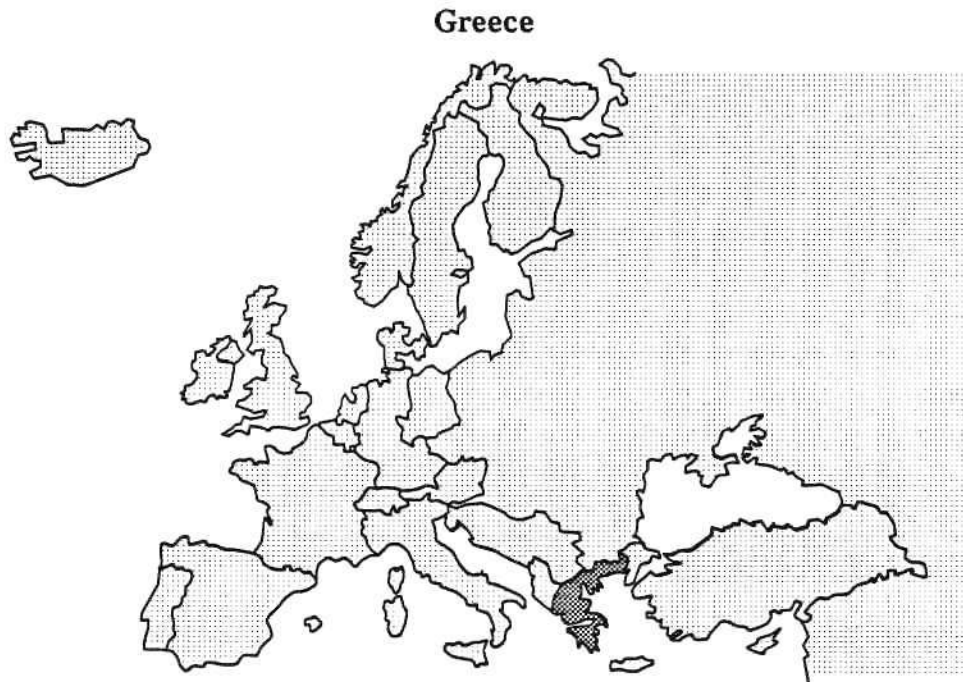
Rest of Europe



Regional Statistics		CAD/CAM-Related Data	
Total engineers	715,506	1988 Market size	
Electrical/electronic	N/A	Revenue (millions)	\$ 91
Mechanical	N/A	Workstations shipped	2,275
Chemical/biological	N/A	Installed base	5,416
Metallurgical/materials	N/A	1988 Revenue Mix by Application	
Civil/architectural	N/A		
Others	N/A		
N/A = Not Available			

0003840-1

Source: U.S. Department of Commerce  
The World Bank  
Dataquest  
April 1989

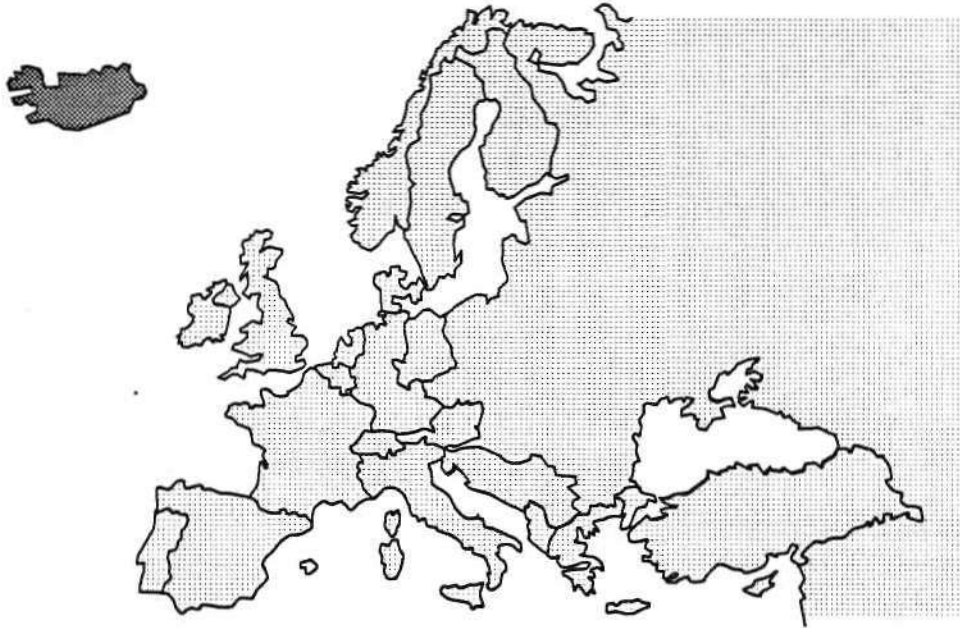


Country Statistics			
Total population (millions)	9.97	Structure of production (% 1985 GDP)	
Area (square kilometers)	131,944	Agriculture	17
Population density	76:1	Industry	29
		(Manufacturing = 18%)	
Trade balance (US\$-billions)	(6.7)	Service	54
1988 GDP (1980 US\$-billions)	44.4		
1988 GDP (Dr-billions)	1,887.7	1988 exchange rate (Dr/US\$)	143
1989 real GDP growth rate (% est.)	13.1		
		1988 unemployment rate (%)	7.4

0003840-2

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

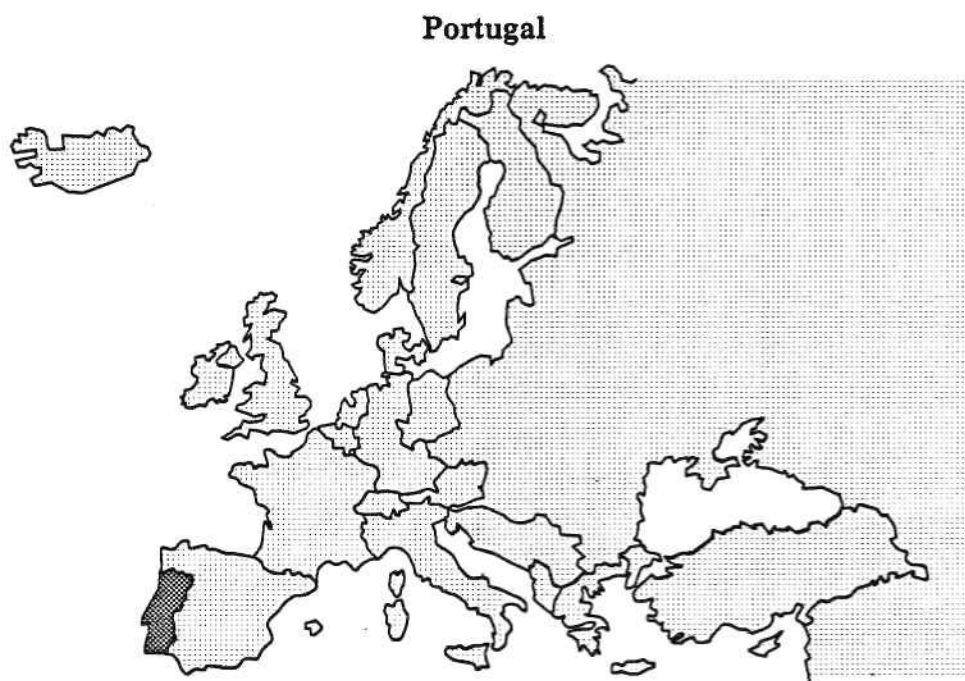
## Iceland



Country Statistics			
Total population (millions)	0.24	Structure of production (% 1985 GDP)	
Area (square kilometers)	103,000	Agriculture	N/A
Population density	2:1	Industry	N/A
		(Manufacturing = N/A )	
Trade balance (US\$-billions)	(0.1)	Service	N/A
1988 GDP (1980 US\$-billions)	4.1		
1988 GDP (1980 IKr-billions)	19.2	1988 Exchange rate (IKr/US\$)	43.5
1989 real GDP growth rate (% est.)	1.9		
		1988 Unemployment rate (%)	0.6
		N/A = Not Available	

0003840-3

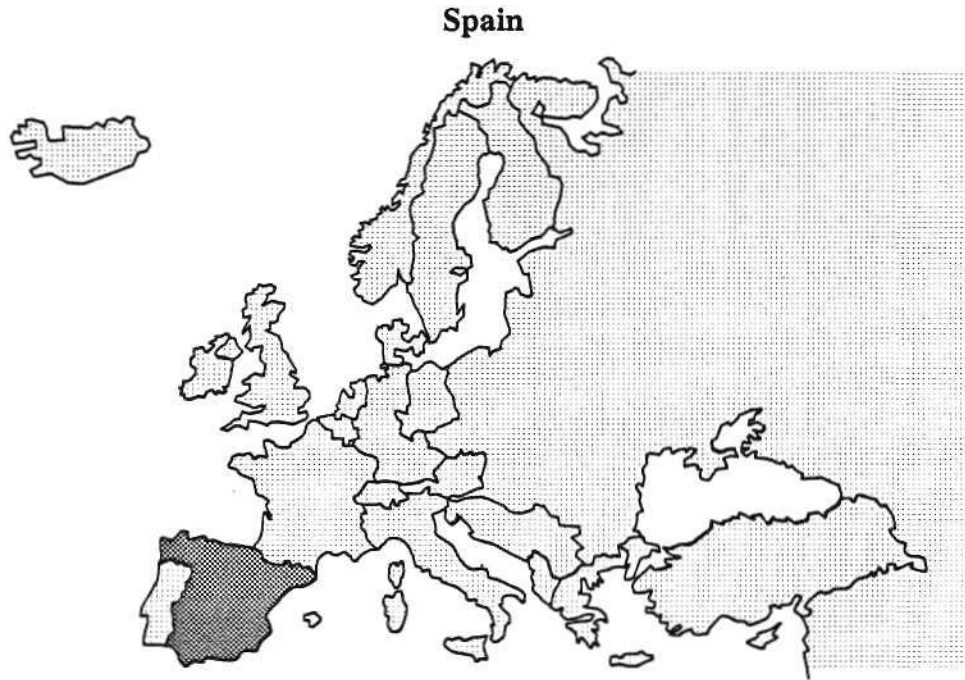
Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989



Country Statistics			
Total population (millions)	10.29	Structure of production (% 1985 GDP)	
Area (square kilometers)	92,082	Agriculture	9
Population density	112:1	Industry	40
		(Manufacturing = N/A)	
Trade balance (US\$-billions)	(3.7)	Service	51
1988 GDP (1980 US\$-billions)	30.0		
1988 GDP (1980 Esc-billions)	1,500.3	1988 Exchange rate (Esc/US\$)	142.9
1989 real GDP growth rate (% est.)	3.7		
		1988 Unemployment rate (%)	6.6
N/A = Not Available			

0003840-4

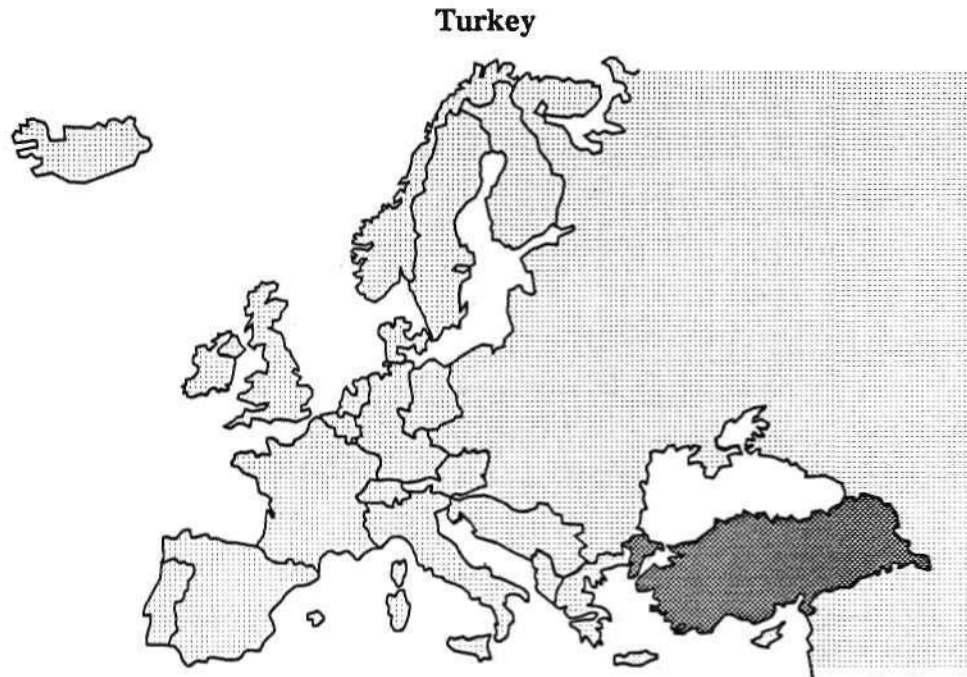
Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989



Country Statistics			
Total population (millions)	38.67	Structure of production (% 1985 GDP)	
Area (square kilometers)	504,782	Agriculture	15
Population density	77:1	Industry	36
		(Manufacturing = 25%)	
Trade balance (US\$-billions)	(20.6)	Service	49
1988 GDP (1980 US\$-billions)	259.1	1988 Exchange rate (Pta/US\$) - 116.58	
1988 GDP (1980 Pta-trillions)	18.5	1988 Unemployment rate (%) 19.1	
1989 real GDP growth rate (% est.)	5.1		
N/A = Not Available			

0003840-5

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989



Country Statistics			
Total population (millions)	50.3	Structure of production (% 1985 GDP)	
Area (square kilometers)	780,576	Agriculture	19
Population density	64:1	Industry	35
		(Manufacturing = 25%)	
Trade balance (US\$-billions)	(4.0)	Service	46
1988 GDP (1980 US\$-billions)	92.3		
1988 GDP (1980 Lt-billions)	6,810.4	1988 Exchange rate (Lt/US\$)	2,000
1989 real GDP growth rate (% est.)	5.8		
N/A = Not Available		1988 Unemployment rate (%)	14.8

0003840-6

Source: U.S. Department of Commerce  
 1988 Statistical Yearbook (UNESCO)  
 The WEFA Group  
 Dataquest  
 April 1989

## **8.2 Government, Trade, and Economic Forces**

### **EXECUTIVE OVERVIEW: REST OF EUROPE**

The following summary highlights this region's major economic and political developments of 1988, and presents 1989 economic projections. It is based on reports from The WEFA Group (Wharton Econometric Forecasting Associates).

#### **Greece**

- Steady economic recovery continues in Greece, with 1988 real GDP growth of 3.0 percent. Unemployment averaged 7.4 percent, and inflation, 13.5 percent. Data from 1988 represent a sharp contrast with that from 1987, when GDP declined by 0.5 percent, unemployment was higher than 8.0 percent, and inflation was higher than 15.7 percent.
- GDP growth in 1989 will moderate to the 2.0 to 2.5 percent range. In the longer term, GDP growth should not dip below 1.5 percent, as domestic investment increases and trade barriers between Economic Community (EC) countries are lifted.
- Inflow of nonloan private capital, mainly from the United States and other EC countries, continues to stimulate Greece's economic growth.

#### **Portugal**

- Portugal's economic performance in both 1987 and 1988 has been characterized by rapid growth rates in output, especially domestic demand, progress on inflation, and a significant deterioration in the trade balance.
- The GDP growth rate in 1988 was 3.8 percent and is forecast to remain within the 3.0 to 4.0 percent range in 1989, as both investment and private consumption continue to increase.

#### **Spain**

- Spain's economic boom, which began in mid-1985, is almost directly attributable to its membership in the EC. Rising domestic demand, reflected in the strong growth in merchandise imports, has been the engine of growth. Spain's GDP growth neared 5 percent in 1988.
- The Spanish government faces the economic dilemma of keeping the economic restructuring on track while curbing inflation, controlling money supply and interest rates, and continuing to reduce unemployment.
- The GDP is forecast to continue in the 4 to 6 percent range for the remainder of the forecast period. Domestic demand, in particular investment and private consumption, continues to drive the economy.

- The GDP is forecast to continue in the 4 to 6 percent range for the remainder of the forecast period. Domestic demand, in particular investment and private consumption, continues to drive the economy.
- Longer-term prospects for Spain depend largely on the success of the goals set for European integration.
- Spanish business continues to move toward modernization, with major competitive restructuring for 1992. Other EC countries continue to represent a major source of new investment.

### Turkey

- For the first time in 15 years, the Turkish economy witnessed a surplus, albeit small, in the current account balance in 1988. The improvement in the account balance is attributable to a high, but declining, rate of export growth, a slowdown in import growth, and record tourism earnings.
- GDP growth in 1988 was 6.2 percent and is forecast to increase at the relatively slower rate of 5.8 percent in 1989.
- A significant drop in the rate of inflation is also forecast for 1989, as is a continuing current trade account surplus.



## **8.3 Doing Business in Other European Countries**

### **BACKGROUND ON GREECE**

#### **General Considerations**

Following seven years of military rule, Greece has been ruled by a parliamentary government since 1974. At that time the government was formed by the New Democracy Party pursuing center-right politics. In 1981, the Panhellenic Socialist Movement (PASOK) under Prime Minister Andreas Papandreou came to power and was reelected in June 1985. As the result of a conflict within PASOK in November 1987, Costas Simitis, the economy minister who was highly esteemed by the Economic Community (EC), resigned. His successor is the former trade minister, Panayiotis Roumeliotis. Since March 1985, after the resignation of Constantine Karamanlis, Christos Sartzetakis has been the president of the republic.

The main political parties in Greece are the following:

- Panhellenic Socialist Movement (PASOK)
- New Democracy
- Greek Communist Party (Moscow line)

#### **Industrial Structure**

Greece became a full member of the EC on January 1, 1981, having been an associate member for 20 years prior to that. Therefore, it is only natural that Greece's main trading partner is the EC, which accounts for more than 50 percent of all imports and exports.

One of the government's most serious concerns is the predominance of the Athens/Piraeus region, where more than 50 percent of Greek industry is located. Major industries in this region include oil refineries; steel works; shipyards; textiles; cement; chemicals; pharmaceuticals; electrical industries; and food, beverage, and cigarette manufacture. The only other important industrial area is Salonica in the north of Greece.

The most important economic sector in Greece is the services sector, which includes banking, shipping, and tourism. The major source of foreign exchange earnings is the Greek tourist industry. Another important economic sector is agriculture, where approximately 30 percent of the Greek work force is employed. The manufacturing sector, on the other hand, is weak. Manufacturing includes many small and medium-size family owned companies, and only a few industries are competitive on a European scale.

Greece's economic problems have resulted in a negative balance of payments, inflation, and lack of industrial investment. In order to combat these problems, the Greek government introduced a two-year austerity program in the last quarter of 1985.

This austerity program included a devaluation of the drachma, a cut in real incomes, and the introduction of an import deposits scheme.

## **GOVERNMENT POLICIES IN GREECE**

### **Taxation**

Greece still operates a very complex system of indirect taxes. Value-added tax (VAT) was introduced only in 1987. The other indirect taxes will be either abolished or brought in line with the EC rules by 1989.

The following taxes apply in Greece:

- **Personal income tax**—People domiciled or resident in Greece are taxed on all their income, whereas nonresident foreigners pay tax only on their income derived in Greece.
- **Corporate income tax**—All undistributed annual profits of a company are subject to corporate income tax.

## **INVESTMENT CONSIDERATIONS IN GREECE**

### **Direct Foreign Investment**

As a result of the weak domestic manufacturing industry, a strong potential exists in the Greek market for many products and services. Investment possibilities include construction services and construction and mining equipment; food processing and packaging; telecommunications; computers, peripherals, and software; radio transmitting/receiving equipment; scientific and medical instruments; hospital equipment; and renewable energy systems.

### **Investment Incentives**

In order to boost the country's exports and to encourage establishment of companies in areas other than the Athens/Piraeus area, the Greek government offers the following three types of investment incentives:

- **Regional development incentives** (Government grants are available for companies willing to set up operations in regions of low industry.)

- Incentives for export-oriented operations (These incentives consist mainly of tax incentives in order to boost the country's exports.)
- Incentives for foreign companies establishing in Greece

To obtain more detailed information on the various types of incentives, the reader should contact the Hellenic Industrial Development Bank (ETVA) and the Ministry of National Economy.

### **OTHER BUSINESS CONSIDERATIONS IN GREECE**

The following companies may be established under company law in Greece:

- Anonymous Etairia—This type of company is equivalent to the French societe anonyme. (A minimum capital of 5 million drachma has to be fully paid up.)
- Etairia Periorismenes Efthines—This type of company is the equivalent to the French societe a responsabilite limtee. (A minimum capital of 200,000 drachma has to be fully paid up.)
- Omorithmos Etairia and Eteroithmos Etairia—These company types are comparable to a general or limited partnership, respectively. (No rules are set for a minimum capital requirement.)

### **BACKGROUND ON ICELAND**

#### **Government Structure**

The Republic of Iceland is a democratic state with a split power system. The president and the general assembly (althing) look after the legislation, and the prime minister and his cabinet are responsible for the administration. Elections are held every four years. The president is elected directly; the 60 members of the althing are elected by proportional representation. Of these members, 20 sit in the upper house and the remaining two-thirds sit in the lower house. The president of Iceland is Mrs. Vigdis Finnbogadottir, who has held this post since August 1980.

The main political parties in Iceland are:

- Independence Party
- Progressive Party

- Citizens' Party
- Social Democratic Party
- People's Alliance
- SD Federation
- Women's Alliance

The last general election was held in April 1987. No party achieved an overall majority. The biggest party, the Independence Party, lost a considerable amount of votes due to a split within the party only one month prior to the election, resulting in the formation of the Citizens' Party. Six weeks after the election, a coalition government consisting of the Independence Party, the Social Democratic Party, and the Progressive Party was formed. Thorsteinn Pálsson of the Independence Party was appointed as prime minister.

#### **Industrial Structure**

Iceland is a member of NATO, the United Nations, OECD, GATT, and EFTA, and it has signed a free-trade agreement with the EC.

Iceland's economy depends heavily on foreign trade. Exports of goods and services generally contribute to about 50 percent of gross domestic product (GDP). The economy is very much one-sided because it is oriented around the fishing industry, which accounts for approximately 75 percent of the total exports. This situation and the absence of natural resources make the country very vulnerable to international currency changes—especially falls in the dollar, on which most exports are calculated. The recent decline of the dollar has caused a considerable fall in Iceland's export revenue.

### **GOVERNMENT POLICIES IN ICELAND**

#### **Intellectual Property Protection**

Manufacturers and traders are strongly advised to patent their inventions and register their trademarks in Iceland. Applications should be made through a patent or trademark agent, either in Iceland or in the country of residence. Iceland subscribes to the International Convention for the Protection of Industrial Property.

The first user of a trademark for both services and goods is entitled to registration and exclusive use of a trademark for 10 years. It may be renewed for similar periods.

## **Taxation**

The principal forms of taxation in Iceland include the following:

- **Sales tax**—A 25 percent sales tax is levied at the retail stage on all imported and locally produced goods apart from certain exceptions.
- **Special goods tax**—A wide range of imported and locally produced goods is subject to a temporary special goods tax that is 24 percent of the duty-paid value. A special rate of 30 percent is levied on luxury and semiluxury goods.
- **Goods tax**—Sugar and chocolate confectionary are subject to a 7 percent goods tax, and soft drinks and malt beer are subject to a 30 percent goods tax, which is levied on the duty-paid value.
- **Car tax**—Certain motor vehicles are subject to a car tax that ranges between 5 and 32 percent.
- **Equalization tax**—A 3 percent equalization tax is levied on the CIF value of all goods. For prefabricated buildings, this tax is 12 percent.

## **INVESTMENT AND OTHER BUSINESS CONSIDERATIONS IN ICELAND**

Iceland is a good potential market for products such as automotive parts and accessories, computers and software, tools and hardware items, and sportswear and leisure equipment. Entry of foreigners and foreign capital into industry is very much restricted in Iceland, however. Most businesses have to be licensed, and usually only Icelandic nationals qualify for registration. Especially tight restrictions apply in the fishing, aviation, tourism, legal, medical, and real estate sectors.

## **BACKGROUND ON PORTUGAL**

### **General Considerations**

After 40 years of authoritarian regime under Antonio de Oliveira Salazar and a two-year period of revolution (1974 to 1976), Portugal became a constitutional democracy in 1976. The first constitutional government under the Socialist Party of Mario Soares was formed as a result of an election in April 1976. Since then, governments have been short-lived and largely ineffectual—Portugal has had 10 constitutional governments over the last decade. It wasn't until July 1987 that the Social Democratic Party under Anbal Cavaco Silva became the first party ever to achieve a majority in the Portuguese National Assembly. After this, Portugal can look forward to four years of stable government. The current president of Portugal is Mario Soares, who won the presidential elections in 1986.

The main political parties in Portugal are:

- Social Democratic Party
- Socialist Party
- Communist Party of Portugal
- Center Democratic Party
- Monarchist Party
- Democratic Renewal Party

#### **Industrial Structure**

Portugal became a member of the EC on January 1, 1986, together with Spain. Unlike Spain, however, prior to joining the EC, Portugal already was a member of EFTA. This made it easier for Portugal to bring its duties and tariffs in line with the EC rules. The EC accession resulted in a great increase of imports from EC countries, which adversely affected U.S. exports into Portugal—in particular, agricultural products. U.S. exports to Portugal in 1987 declined by 9 percent to \$581 million.

Following the EC accession and the stabilization of the Portuguese government, which won the elections on an electoral program of privatization and less state intervention in national life, the economy showed a remarkable turnaround.

### **GOVERNMENT POLICIES IN PORTUGAL**

#### **Intellectual Property Protection**

Manufacturers and traders are strongly advised to patent their inventions and register their trademarks in Portugal. Doing this automatically will register them for Madeira and the Azores also. Because of the complexity of the legislation, it is advisable to use a trademark or patent agent in Portugal.

#### **Taxation**

A major form of taxation in Portugal is the value-added tax (VAT). Following Portugal's accession to the EC, all taxes and surcharges were abolished in January 1986 and replaced by the VAT. The rates are 0, 8, 16, or 30 percent for mainland Portugal and 0, 8, 12, or 21 percent for Madeira and the Azores. A special tax will be imposed on certain alcoholic beverages.

## **INVESTMENT AND OTHER BUSINESS CONSIDERATIONS IN PORTUGAL**

Since the EC accession in 1986, industry in Portugal has been undergoing a period of revitalization requiring new technology and top-level management skills. A strong potential exists in the Portuguese market for products such as computers, peripherals, and software; telecommunications equipment; metalworking equipment; medical equipment; and automotive parts. In order to provide more opportunities for private investment in the public sector, one of the government's priorities is to ease the legislation on nationalization. Also, recognizing the need for foreign investment, the government brought the law for this kind of investment in line with international practices in 1986.

## **BACKGROUND ON SPAIN**

### **General Considerations**

Joining the EC at the beginning of 1986 has been instrumental in Spain's process of modernization. In the presence of EC regulations, Spain was compelled to gradually cut down its high trade barriers and other measures aimed at protecting the national industries. As a result, local companies are confronted with many more foreign competitors tempted by the growth potential of the Spanish economy and its strategic position in the northern Mediterranean region.

The increased competition within Spain, combined with the outlook for potentially high export sales to the other EC member states, led to great concern among Spanish industrialists and policy makers about the competitiveness of Spanish industries and services, and action was taken to boost the efficiency and competitiveness of Spanish companies. The government, being of a moderately socialist persuasion, has been particularly active in adapting the industrial structure to the requirements of international competition. Structurally weak sectors such as shipbuilding, the steel sector, and several of the state-owned companies were completely turned around. In addition, Spanish as well as foreign entrepreneurs have started to restructure Spanish corporations, whereby the search for economies of scale for the small Spanish companies has been the driving force.

Despite the high economic growth rates of the past few years, the level of unemployment has remained significantly high—in fact, the highest in Europe. Although new jobs are being created at a rapid pace, the economy is still unable to absorb the large number of young, and often wrongly qualified, Spaniards.

### **Business Regions**

Business in Spain is concentrated in and around the two largest cities in the country—Madrid and Barcelona. The capital city of Madrid houses the government bureaucracies and most of the headquarters of the multinational companies. Conversely,

Barcelona and the surrounding region of Catalonia, known for its high level of entrepreneurship, are the locations for many small companies. (Barcelona will host the Olympic Games in 1992, resulting in upgrading of the city's infrastructure.) Other important business areas, although of less weight than Madrid and Barcelona, are the Basque region in the north of the country, the region around Valencia on the east coast, and the region around the town of Seville in the south.

#### **Political Regions**

During the past few years, Spain has embarked on an ambitious process of regionalization, whereby an average of three provinces are grouped together to form regions. These regions, 17 in total, enjoy a certain autonomy as far as educational and industrial policies are concerned. The northern regions of Galicia and the Basque country enjoy even more self-government than the other regions. This process of regionalization not only reflects the central government's need for a lighter administrative structure in a geographically vast country, but it also reflects the wide social and cultural differences between the Spanish regions. On top of this administrative structure, however, Madrid is increasingly developing its capital city status, integrating the regions, and housing most of the nationwide decision makers.

### **GOVERNMENT POLICIES IN SPAIN**

#### **Intellectual Property Protection**

Manufacturers and traders are strongly advised to patent their inventions and register their trademarks in Spain. Applications should be made through a patent or trademark agent, either in the country of residence or in Spain. Spain subscribes to the International Convention for the Protection of Industrial Property.

##### *Patents*

Patents are granted for a period of 20 years from the date of grant. The terms are subject to the payment of annual renewal fees. If the patented invention has not been worked in Spain over a period of three years, the owner's right may cease. Prior to the date of application, the invention must not have received publicity. If an invention has been patented abroad, a patent can be granted in Spain for a period of 10 years.

##### *Trademarks*

The first applicant is entitled to registration and exclusive use of a trademark. In case a trademark has not been used for five consecutive years, it can be canceled.



## **Taxation**

The current Spanish tax system is complicated, and it is advisable to consult a lawyer or accountant for exact details. To avoid double taxation, an agreement exists based on the OECD model.

Spain has the following taxes:

- **Personal income tax**
  - This tax is assessed on the worldwide income of a person resident in Spain.
  - Nonresidents are taxed only on their Spanish-sourced income, and persons are considered to be nonresident in Spain if they remain in the country for less than 183 days per calendar year.
- **Corporation tax**
  - The current rate of corporation tax is 33 percent, which is levied on a company's worldwide income, including capital gains.
  - Foreign companies not established permanently in Spain are assessed only on their income arising in Spain.
- **IVA (Impuesto sobre Valor Aadido)**
  - IVA is the Spanish version of VAT, introduced in Spain when the country joined the EC.
  - It is not applicable in the Canary Islands, Ceuta, and Melilla.
  - The three different rates of IVA are 6 percent reduced rate, 12 percent standard rate, and 33 percent luxury rate.

## **INVESTMENT CONSIDERATIONS IN SPAIN**

### **Direct Foreign Investment**

The Spanish government encourages all types of investment by foreign companies in order to develop the Spanish economy and to gain access to modern technology. Various tax incentives and relocation grants are available for investment in the

manufacturing industry and in areas of high unemployment. However, because of the high unemployment rate in Spain, it is extremely difficult for foreigners to obtain a work permit. In Spain, work is granted only if the job in question cannot be undertaken by a Spanish national.

#### Types of Investment

The Spanish legislation covers three types of investment:

- **Unrestricted**—It is possible to invest up to 50 percent in a Spanish company without the need for a formal agreement. The same applies to investment in portfolios, as long as the ownership of the company does not change; in real estate, with certain limits; and in housing.
- **Semirestricted**—A notice of intention to invest must be filed with the Spanish authorities in the case of majority participation in a Spanish company, investment in real estate above the limits of the unrestricted category, and investment in strategic/military areas.
- **Restricted**—It is essential to obtain prior permission from the authorities for majority capital participation in gambling, national defense, broadcasting, and air transport.

#### OTHER BUSINESS CONSIDERATIONS IN SPAIN

The following company types are the ones usually chosen by foreign investors:

- **SA (Sociedad Anonima)**
  - An SA, which is a joint stock company, is the most suitable and also the most common type of company for foreign investors.
  - The company must be established by at least three shareholders; however, it needs only one director who does not have to be a Spanish national.
  - All shares must be issued, and at least 25 percent must be paid up.
  - The registration cost for an SA amounts to approximately 3.8 percent of the registered capital.
- **SRL (Sociedad de Responsabilidad Limitada)**
  - An SRL, which is a limited-liability company, is in many ways similar to an SA.

- An SRL must have at least 2 shareholders but not more than 50.
- The maximum permitted capital is Pta 50 million.
- **Branch Office**
  - A branch office must use the original name of the parent company, and must be 100 percent controlled by the parent company.
  - A branch office may not own property in Spain, and repatriation of the branch's capital and profits has to be authorized on each occasion.
- **Joint Venture**
  - Another way to enter the Spanish market is via a joint venture with a Spanish company.
  - The joint venture must have at least three shareholders, and these can be SAs, SRLs, or individuals.
  - In sectors important to the national economy, the Spanish National Institute of Industry (INI) often is prepared to enter into joint ventures with foreign companies.

All of these companies have to be registered at the Mercantile Registry of the Ministry of Justice on formation.

Other possible company types are: Sociedad Colectiva (Partnership), Sociedad Comanditaria (Limited Partnership) and Empresa Individual (Sole Trading).

## **BACKGROUND ON TURKEY**

### **General Considerations**

After three years of military rule, Turgut Ozal, the leader of the Motherland Party, was appointed prime minister as a result of the general election of November 1983. He was reelected for a five-year term in November 1987. The president of Turkey is Kenan Evren.

The main political parties in Turkey are:

- Motherland Party (ANAP)

- Social Democrat Populist Party (SHP)
- True Path Party (TPP)

Since the reinstatement of a democratic government in 1983, Turkey has been gradually recovering from its severe problems. Prime Minister Ozal's measures to liberalize foreign trade and exchange control, to tighten the monetary policy, to restore positive interest rates, and to cut back subsidies to the State Economic Enterprises have resulted in an improvement in the balance of payments and an increase in gross national product (GNP) growth, which was 6.8 percent in 1987. However, the high inflation rate (currently 70 percent), foreign debts, and the availability of foreign exchange are still major problems. The high inflation rate is causing unrest among the working population because of declining living standards, and there are fears that this unrest could lead to isolated outbreaks of violence.

#### **Affiliations**

Turkey is a member of IMF, IBRD, GATT, UN, OECD, and NATO. With an army of 800,000, it has NATO's second largest army. Turkey also belongs to the Council of Europe and the Islamic Development Bank and has been an associate member of the EC since 1963. On April 14, 1987, Turkey filed an application for full EC membership; however, Greece is strongly opposed and will accept Turkey's inclusion in the EC only if Turkey commits to full troop withdrawal from Cyprus. At the EC meeting in April 1988, Turkey walked out because the EC stated formally that Turkey's relations with the EC were affected by the Cyprus issue. In order to improve the relations between Greece and Turkey on this and other issues, Turgut Ozal, as the first Turkish prime minister in 36 years, officially visited the Greek prime minister, Andreas Papandreu, in Athens in June 1988.

### **GOVERNMENT POLICIES IN TURKEY**

#### **Intellectual Property Protection**

Manufacturers and traders are strongly advised to patent their inventions and register their trademarks in Turkey. Applications should be made through a patent or trademark agent in Turkey.

#### **Taxation**

The principal forms of Turkish taxation are the following:

- Value-added tax (VAT)

- Turkey introduced VAT on January 1, 1985; it is imposed on all imports, with few exceptions, at 12 percent.
- Municipal tax—The rate of municipal tax is currently 15 percent of customs duty.
- Housing fund tax—Housing fund tax is levied on certain goods and luxury items, and the proceeds are transferred into a housing fund.
- Stamp duty—A 6 percent stamp duty is levied on the CIF value of goods.

All of the above-mentioned taxes are in addition to customs duty.

### **INVESTMENT AND OTHER BUSINESS CONSIDERATIONS IN TURKEY**

The Turkish government offers a number of investment incentives to foreign companies; these are generally in the form of exemption from customs duties and taxes. All major areas of industry are potentially open to foreign investors as long as they contribute to the country's economic development. In addition, the Turkish government has established free port/trade zones in Mersin, Antalya, Adana, and Izmir to encourage foreign investment and private enterprise.

Products and services with strong potential in the Turkish market include telecommunications; computers; aircraft and motor vehicles; chemicals; food processing and packaging; medical equipment; pollution-control equipment; and mining, engineering, and construction services. Opportunities for joint ventures with Turkish companies are good in the areas of agribusiness, power generation, defense-related products, mining, and tourism. Moreover, Turkey is on friendly terms with both Iran and Iraq, making the country an ideal gateway for foreign investors who want to deal with these two countries. The relevant embassies will provide addresses of Turkish companies trading in foreign goods with both countries and of Turkish firms willing to cooperate with foreign companies in joint ventures in third countries.

### **BACKGROUND ON YUGOSLAVIA**

#### **General Considerations**

The socialist federal republic of Yugoslavia consists of 6 republics (Bosnia-Herzegovina, Croatia, Macedonia, Montenegro, Serbia, and Slovenia) and two autonomous provinces (Vojvodina and Kosovo) which are attached to Serbia. Since May 1986, Branko Mikulic has been president of the Federal Executive Council (prime minister). The state president of Yugoslavia is Ivo Vrandecic.

In May, 1987, Mr. Mikulic had to face a vote of confidence because members of parliament from the six republics and the two provinces were critical of the government's handling of Yugoslavia's economic crisis. In 1987, the situation was marked by declining productivity and continuing massive price increases resulting in an inflation rate of 170 percent by the end of 1987. The decline in real wages caused by the high inflation rate is having a negative effect on the workers' morale and labor productivity. It has caused persistent strikes, which have seriously interrupted the manufacture of capital goods, textiles, footwear, and durable consumer goods.

In order to overcome its economic problems, the Yugoslav government has negotiated a standby agreement with the International Monetary Fund. This agreement will restructure the country's \$20 billion debt and provide some relief from debt-servicing requirements. The Fund is prepared to grant this standby credit under the conditions that inflation will be reduced substantially, budgetary expenditure will be cut, and tight wage controls will be introduced. The government's economic package—which includes control of wages, liberalization of prices, and trade and foreign exchange regulations—is likely to face significant opposition within Yugoslavia, however.

#### **Industrial Structure**

In Yugoslavia, industry is organized by a system of social self-management. Enterprises are socially owned, meaning that they are not state owned but belong to the society as a whole. These enterprises are called Basic Organization of Associated Labor (OOUR) and can be just one factory. More often, however, a number of these OOURs form a Work Organization (RO) that, in turn, can form a Joint Organization of Associated Labour (SOUR) with other ROs. The workers in these enterprises manage them through a workers' council, which is elected by the workers. These senior managers can be held personally responsible for their proposals and decisions. The social accountancy service (SDK) is monitoring the activities of these enterprises.

### **GOVERNMENT POLICIES IN YUGOSLAVIA**

#### **Intellectual Property Protection**

The Yugoslav law on the Protection of Invention, Technical Improvements, and Trademarks became effective on December 27, 1981. As a result, foreigners may patent their inventions and register their trademarks in Yugoslavia.

If an application for a patent is acceptable, it will be published 18 months after filing of the application. A patent is then granted for 7 years. If it is conscientiously worked, it can be renewed for similar 7-year periods.

There are no limits on the duration of a trademark.

### **Taxation**

In addition to customs duty, all imported goods are also subject to two other taxes in Yugoslavia. These taxes are an 8 percent special equalization tax and a 1 percent customs clearance charge.

## **INVESTMENT AND OTHER BUSINESS CONSIDERATIONS IN YUGOSLAVIA**

### **Investment and Export**

Yugoslavia's main trading partners are the Union of Soviet Socialist Republics, accounting for almost a quarter of total trade, followed by West Germany, Italy, and the United States. Foreign trade is handled exclusively by enterprises registered for import/export and representation activities.

The main barrier to exporting to Yugoslavia at present is the country's lack of foreign exchange. The ability of a Yugoslav enterprise to import depends on whether it has access to foreign exchange, which is fully controlled by the National Bank of Yugoslavia. Delays have occurred in payments for exports to Yugoslavia. The usual practice of Yugoslav companies, therefore, is to place commitment on foreign companies to enter into a counterpurchase contract when selling into Yugoslavia.

### **Corporate Law**

The following three principal forms of business exist in Yugoslavia:

- **Agency**
  - A foreign manufacturing company (but not a trading firm) can obtain permission to appoint an agent in Yugoslavia; this agent must be an enterprise authorized for representation activities.
  - Foreign companies are not allowed to appoint individuals resident in Yugoslavia to act for them, and only one agent may be appointed.
- **Joint venture**
  - It is possible to enter into a joint venture with a Yugoslav company in all areas but insurance, commerce, and social services.
  - The foreign partner's equity holding can be between 10 and 49 percent.
  - Joint ventures need prior approval by the Federal Committee for Energy and Industry.

- Representative office
  - A foreign company can obtain permission to set up a representative office if it has established a joint venture, a long-term business relation, a manufacturing cooperation, or a business technical cooperation with a Yugoslav company.
  - At least half of the staff in such a representative office must be Yugoslav.

#### **CAD/CAM**

The 1987 CAD/CAM market in the Rest of Europe (ROE) amounted to \$56 million, representing more than 2 percent of the total European market and reflecting a growth of approximately 55 percent over 1986. This growth is significantly higher than the average market growth of 29 percent for the whole of Europe.

#### **Distribution Channels**

Most of the major worldwide CAD/CAM vendors operate in the ROE region, and there are significant growth areas. Most applications are represented in the same proportions as elsewhere. However, penetration is very low. The use of CAD/CAM is increasing, but the relatively high prices of specialist hardware and the lack of expert users are constraining rapid development.

Most vendors sell into the ROE areas via distributors or agents. Very few of the leading worldwide vendors have local representation in these countries, with the exception of Spain. Ties with Austria are strong, and shipments to Eastern Europe often pass through Austria.

For European vendors, there is significant opportunity in the COMECON territories, particularly in Czechoslovakia. The governments of these countries find it easier to deal with European vendors than with U.S. vendors. Therefore, the more European the local operation appears to be, the easier it is for it to win business in these areas. Companies such as Skoda are investing heavily in western CAD/CAM and automation technology.

Although vendors finally deal with individual companies, the influence of central government is never far away. In COMECON regions, companies must prepare a case for every purchase and petition the government for approval to spend currency abroad. Once approved, the sale cycle is very short compared with sales in freer parts of the European market. Sales cycles as short as six months from initial inquiry to installation have been reported.



When vendors are invited to bid for business, such is the influence of central government and such is the high level of interaction with government that visas for visiting vendor personnel are often waived. In these cases, software vendors and turnkey vendors penetrate the COMECON markets by supporting such hardware vendors as Apollo and Digital Equipment Corporation.

It is easier to deal with countries like Turkey, Yugoslavia, and Czechoslovakia nowadays because of "glasnost" and the freer attitudes toward the West. Furthermore, these regions do have hard currency nowadays—horror stories of CAD vendors taking payment in shiploads of fish are unlikely to recur.

One caution should be noted, however. Countries that border Eastern Europe—i.e., Finland, Austria, and Yugoslavia—attract the attention of the U.S. Department of Commerce. Export licenses are essential in every case, and the "higher" the technology (e.g., 64-bit high-mips machines), the more difficult these licenses are to secure.

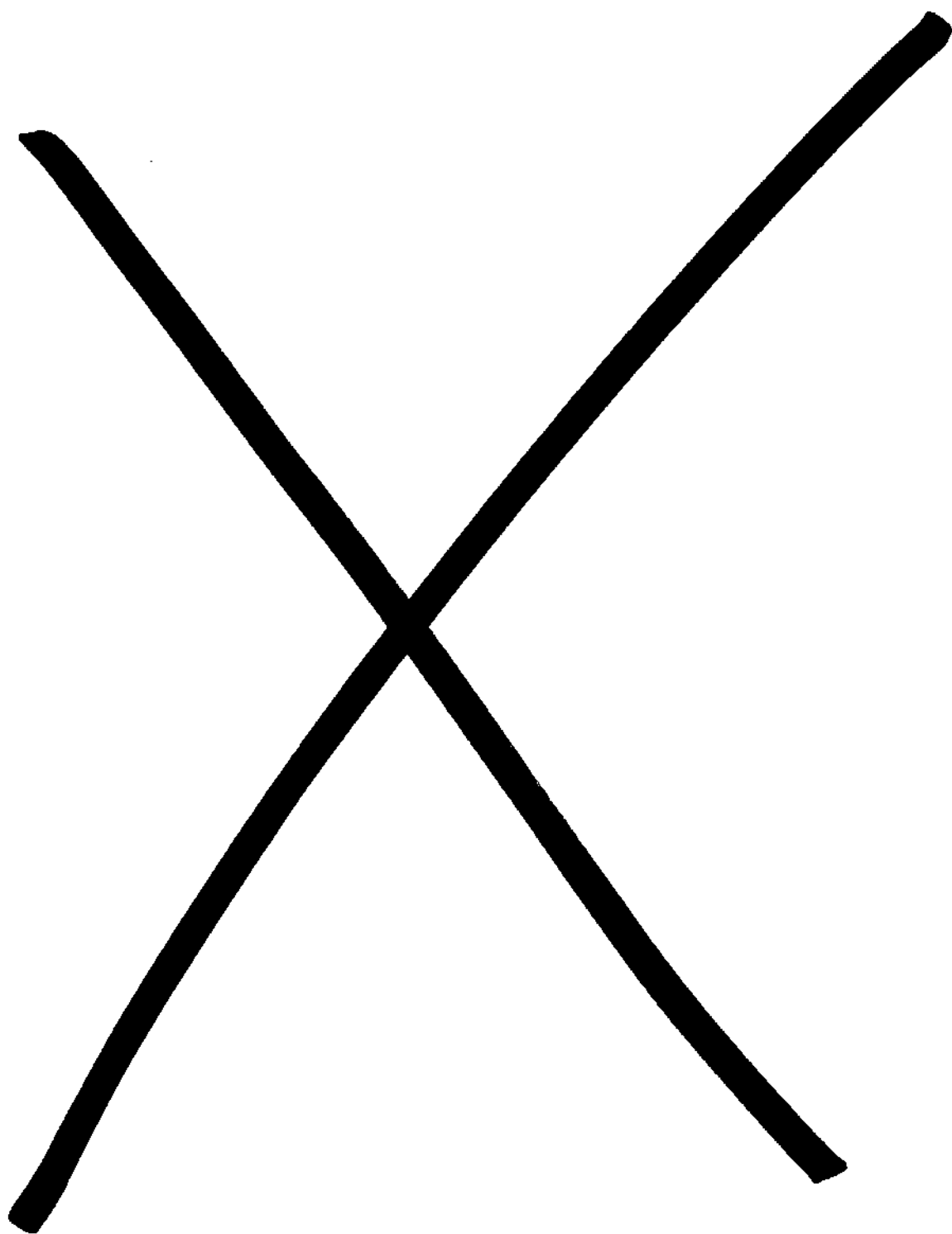


TABLE NUMBER: 1  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	5,792	15,585	45,422	62,710	90,895	115,880	140,600	162,330	182,630	200,850	99%	17%
Workstation Shipments	8,246	20,388	52,775	71,381	102,281	126,350	149,800	169,530	189,120	206,630	88%	15%
CPU Installed Base	7,268	22,846	54,200	110,656	214,701	316,750	429,900	546,890	684,340	840,680	133%	31%
Workstation Installed Base	12,283	32,647	71,189	135,681	251,531	363,330	483,980	604,000	743,880	901,810	113%	29%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	242.9	185.0	108.4	51.2	66.9	61.6	55.5	48.3	44.8	43.0	-28%	-8%
Hardware-Only ASP	43.6	22.4	10.9	12.4	10.8	10.2	9.8	9.4	9.2	9.3	-29%	-3%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	1,370	1,382	1,995	2,242	2,441	2,537	2,660	2,816	NA	7%
CPU Revenue	NA	NA	853	894	1,418	1,645	1,834	1,944	2,057	2,192	NA	9%
Workstation Revenue	NA	NA	329	282	188	201	184	154	144	140	NA	-6%
Peripheral Revenue	NA	NA	188	205	389	397	423	438	459	485	NA	5%
Software Revenue	NA	NA	452	734	886	1,127	1,357	1,556	1,791	2,031	NA	18%
Bundled	NA	NA	312	295	403	479	508	521	537	556	NA	7%
Unbundled	NA	NA	140	440	483	648	848	1,035	1,254	1,474	NA	25%
Service Revenue	98	116	176	413	526	617	699	760	836	919	52%	12%
Total Revenue	707	1,209	1,985	2,511	3,387	3,987	4,497	4,853	5,288	5,766	48%	11%
Increase over Prior Year		71%	64%	27%	35%	18%	13%	8%	9%	9%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 2  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Europe  
 PLATFORM: Technical Workstation

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	1,269	3,140	7,690	14,900	25,404	36,900	51,260	67,790	84,670	101,520	112%	32%
Workstation Shipments	1,356	3,140	7,690	14,900	25,404	36,900	51,260	67,790	84,670	101,520	108%	32%
CPU Installed Base	1,814	4,954	12,627	27,234	51,848	86,770	133,600	192,620	268,650	361,580	131%	47%
Workstation Installed Base	1,814	4,954	12,627	27,234	51,848	86,770	133,600	192,620	268,650	361,580	131%	47%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	58.5	78.6	73.2	43.6	49.7	45.9	42.8	40.0	38.0	37.4	-4%	-6%
Hardware-Only ASP	31.2	37.4	31.3	24.7	21.5	20.2	18.4	16.6	15.1	14.4	-9%	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	323	418	816	1,061	1,318	1,558	1,747	1,959	NA	19%
CPU Revenue	NA	NA	264	338	662	863	1,071	1,262	1,420	1,595	NA	19%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	60	80	155	199	247	296	327	364	NA	19%
Software Revenue	NA	NA	166	354	438	638	873	1,110	1,352	1,598	NA	30%
Bundled	NA	NA	142	159	198	256	311	362	392	425	NA	17%
Unbundled	NA	NA	24	195	240	382	562	748	960	1,173	NA	37%
Service Revenue	9	31	41	165	278	375	481	580	669	763	139%	22%
Total Revenue	79	258	564	938	1,538	2,075	2,671	3,248	3,768	4,320	110%	23%
Increase over Prior Year		228%	119%	66%	64%	35%	29%	22%	16%	15%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 3  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Europe  
 PLATFORM: Host-Dependent/Server

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	970	1,222	1,709	3,684	4,007	4,200	4,110	3,620	3,540	3,570	43%	-2%
Workstation Shipments	3,337	6,025	9,061	12,355	15,393	14,670	13,310	10,820	10,030	9,360	47%	-9%
CPU Installed Base	1,901	3,116	4,867	8,731	12,088	15,740	19,020	21,400	23,750	26,370	59%	17%
Workstation Installed Base	6,916	12,917	21,855	33,756	48,917	62,330	73,100	78,510	83,290	87,500	63%	12%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	552.9	552.9	583.8	231.5	337.1	316.3	294.3	273.9	256.8	240.5	-12%	-7%
Hardware-Only ASP	392.6	862.2	497.4	246.2	175.8	155.8	144.6	135.6	131.4	125.1	-18%	-7%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	821	753	890	837	746	601	551	511	NA	-10%
CPU Revenue	NA	NA	376	359	477	449	399	319	292	270	NA	-11%
Workstation Revenue	NA	NA	329	282	188	201	184	154	144	140	NA	-6%
Peripheral Revenue	NA	NA	116	113	224	186	163	127	114	101	NA	-15%
Software Revenue	NA	NA	199	256	295	310	288	243	233	225	NA	-5%
Bundled	NA	NA	142	113	186	206	186	149	137	125	NA	-8%
Unbundled	NA	NA	57	143	108	104	102	94	96	101	NA	-1%
Service Revenue	89	84	124	227	229	220	196	158	145	133	27%	-10%
Total Revenue	576	846	1,147	1,239	1,394	1,367	1,230	1,001	928	870	25%	-9%
Increase over Prior Year		47%	36%	8%	13%	-2%	-10%	-19%	-7%	-6%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 4  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Europe  
 PLATFORM: Personal Computer

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	3,553	11,223	36,023	44,126	61,484	74,770	85,230	90,920	94,410	95,760	104%	9%
Workstation Shipments	3,553	11,223	36,023	44,126	61,484	74,770	85,230	90,920	94,410	95,760	104%	9%
CPU Installed Base	3,553	14,776	36,707	74,691	150,765	214,240	277,290	332,860	391,940	452,730	155%	25%
Workstation Installed Base	3,553	14,776	36,707	74,691	150,765	214,240	277,290	332,860	391,940	452,730	155%	25%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	38.5	18.8	8.5	10.1	11.0	9.6	8.4	7.7	6.9	NA	-7%
Hardware-Only ASP	14.2	5.6	3.7	3.8	4.3	4.4	4.3	4.1	3.8	3.6	-26%	-3%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	225	210	289	344	377	379	362	346	NA	4%
CPU Revenue	NA	NA	213	197	279	333	364	364	345	326	NA	3%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	12	12	10	12	13	15	17	19	NA	14%
Software Revenue	NA	NA	86	125	153	179	196	204	207	208	NA	6%
Bundled	NA	NA	28	23	19	17	12	10	8	6	NA	-19%
Unbundled	NA	NA	58	102	134	162	184	194	199	201	NA	8%
Service Revenue	1	2	11	21	19	21	22	23	22	22	115%	3%
Total Revenue	52	105	273	333	455	545	595	605	591	575	72%	5%
Increase over Prior Year		105%	159%	22%	36%	20%	9%	2%	-2%	-3%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 5  
 TITLE: History and Forecast  
 APPLICATION: Mechanical  
 REGION: Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	2,129	8,606	23,359	33,390	54,817	68,340	81,500	91,790	100,340	107,470	125%	14%
Workstation Shipments	3,704	12,338	29,246	40,508	63,948	76,470	88,780	97,520	105,770	112,520	104%	12%
CPU Installed Base	2,603	11,207	26,957	51,652	119,451	180,840	247,960	314,970	390,570	473,570	160%	32%
Workstation Installed Base	5,879	18,211	39,729	71,118	148,241	217,570	290,760	360,240	438,050	522,750	124%	29%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	520.1	225.8	124.7	58.0	71.0	63.8	56.9	48.1	44.2	41.9	-39%	-10%
Hardware-Only ASP	50.5	18.4	12.0	13.7	11.3	10.9	10.7	10.3	10.4	10.7	-31%	-1%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	875	876	1,304	1,436	1,541	1,535	1,599	1,666	NA	5%
CPU Revenue	NA	NA	498	534	912	1,049	1,154	1,176	1,224	1,276	NA	7%
Workstation Revenue	NA	NA	256	217	137	132	124	106	109	113	NA	-4%
Peripheral Revenue	NA	NA	121	125	255	254	263	254	266	277	NA	2%
Software Revenue	NA	NA	239	393	498	629	764	861	1,000	1,139	NA	18%
Bundled	NA	NA	175	177	271	305	315	305	315	323	NA	4%
Unbundled	NA	NA	64	216	227	324	448	556	685	816	NA	29%
Service Revenue	59	69	107	257	337	389	439	461	508	553	55%	10%
Total Revenue	396	730	1,206	1,517	2,116	2,454	2,743	2,857	3,107	3,357	52%	10%
Increase over Prior Year		84%	65%	26%	39%	16%	12%	4%	9%	8%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 6  
 TITLE: History and Forecast  
 APPLICATION: AEC  
 REGION: Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	1,679	3,383	9,589	13,366	17,383	25,180	31,000	36,820	41,940	46,180	79%	22%
Workstation Shipments	2,062	3,945	10,261	13,996	18,474	26,350	31,860	37,430	42,350	46,460	73%	20%
CPU Installed Base	1,805	5,187	12,334	30,396	43,731	65,690	90,520	117,460	149,540	186,050	122%	34%
Workstation Installed Base	2,456	6,400	14,223	32,852	47,221	70,150	95,520	122,620	154,680	191,130	109%	32%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	395.8	165.1	115.6	46.9	60.4	57.3	50.9	46.4	43.1	41.5	-37%	-7%
Hardware-Only ASP	23.1	14.8	7.1	6.0	7.2	6.6	6.1	5.5	4.9	4.6	-25%	-9%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	161	152	254	311	331	346	347	358	NA	7%
CPU Revenue	NA	NA	111	115	196	245	270	289	294	305	NA	9%
Workstation Revenue	NA	NA	33	20	25	30	24	18	13	10	NA	-17%
Peripheral Revenue	NA	NA	16	17	34	36	37	39	40	43	NA	5%
Software Revenue	NA	NA	39	75	92	124	144	162	180	201	NA	17%
Bundled	NA	NA	25	31	36	48	48	48	47	49	NA	6%
Unbundled	NA	NA	15	43	56	76	96	113	132	152	NA	22%
Service Revenue	15	16	19	51	67	81	86	91	94	100	45%	8%
Total Revenue	108	149	212	271	413	516	561	599	620	659	40%	10%
Increase over Prior Year		38%	42%	28%	52%	25%	9%	7%	4%	6%		

Source: Dataquest  
 April 1989

Forecasts



TABLE NUMBER: 7  
 TITLE: History and Forecast  
 APPLICATION: Mapping  
 REGION: Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	40	82	937	2,410	2,899	4,080	5,300	6,510	7,730	8,980	192%	25%
Workstation Shipments	187	333	1,350	2,841	3,596	4,820	6,010	7,130	8,240	9,390	109%	21%
CPU Installed Base	111	190	830	2,685	6,332	10,200	14,930	20,240	26,770	34,560	175%	40%
Workstation Installed Base	512	831	1,842	4,028	8,293	12,760	18,130	23,870	30,720	38,730	101%	36%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	623.8	444.0	201.6	63.7	84.8	74.9	67.9	61.7	56.1	52.4	-39%	-9%
Hardware-Only ASP	305.0	376.5	24.3	34.3	18.0	16.2	13.8	11.1	9.4	8.6	-51%	-14%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	76	105	111	128	147	160	177	199	NA	12%
CPU Revenue	NA	NA	40	66	76	92	109	122	138	159	NA	16%
Workstation Revenue	NA	NA	26	23	16	16	16	14	12	10	NA	-9%
Peripheral Revenue	NA	NA	10	16	19	20	22	24	27	30	NA	10%
Software Revenue	NA	NA	21	33	44	61	77	90	103	118	NA	22%
Bundled	NA	NA	14	23	22	29	34	37	41	47	NA	17%
Unbundled	NA	NA	7	10	22	32	43	53	62	71	NA	26%
Service Revenue	5	7	13	24	25	30	36	41	47	54	48%	17%
Total Revenue	28	48	112	162	180	220	260	291	327	372	60%	16%
Increase over Prior Year		73%	135%	45%	11%	22%	18%	12%	12%	14%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 8  
 TITLE: History and Forecast  
 APPLICATION: Electronic Design Automation  
 REGION: Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	1,944	3,515	11,537	13,544	15,796	18,270	22,800	27,210	32,630	38,210	69%	19%
Workstation Shipments	2,292	3,772	11,918	14,035	16,264	18,700	23,150	27,460	32,760	38,270	63%	19%
CPU Installed Base	2,748	6,262	14,079	25,923	45,187	60,020	76,490	94,220	117,470	146,500	101%	27%
Workstation Installed Base	3,436	7,205	15,395	27,683	47,777	62,850	79,580	97,280	120,410	149,190	93%	26%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	90.7	109.5	69.0	33.2	53.5	53.9	50.6	46.1	43.7	42.9	-12%	-4%
Hardware-Only ASP	65.8	42.9	11.8	15.7	12.5	12.5	12.0	12.7	12.3	12.3	-34%	-0%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	258	248	326	368	423	496	538	594	NA	13%
CPU Revenue	NA	NA	204	180	234	259	302	358	401	452	NA	14%
Workstation Revenue	NA	NA	14	21	11	23	21	17	11	7	NA	-8%
Peripheral Revenue	NA	NA	41	47	81	86	100	121	127	135	NA	11%
Software Revenue	NA	NA	153	234	252	313	372	443	508	573	NA	18%
Bundled	NA	NA	99	64	74	97	111	131	133	138	NA	13%
Unbundled	NA	NA	54	171	178	216	261	312	374	436	NA	20%
Service Revenue	19	24	36	81	97	116	138	167	188	211	50%	17%
Total Revenue	175	283	455	561	678	797	932	1,107	1,234	1,378	40%	15%
Increase over Prior Year		62%	61%	23%	21%	18%	17%	19%	11%	12%		

Source: Dataquest  
 April 1989

TABLE NUMBER: 9  
 TITLE: History and Forecast  
 APPLICATION: Electronic CAE  
 REGION: Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	====	====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	1,244	2,522	6,761	8,124	8,638	9,860	12,860	15,540	18,320	21,030	62%	19%
Workstation Shipments	1,208	2,571	6,849	8,289	8,731	9,940	12,920	15,600	18,350	21,040	64%	19%
CPU Installed Base	1,476	3,997	8,340	15,286	26,280	34,010	43,060	53,080	65,950	81,610	105%	25%
Workstation Installed Base	1,391	3,962	8,379	15,475	27,051	34,880	43,990	54,000	66,820	82,420	110%	25%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	48.5	76.0	49.6	27.5	42.0	43.5	41.5	38.7	36.3	35.4	-4%	-3%
Hardware-Only ASP	41.7	34.0	12.1	15.2	12.9	12.8	11.7	12.4	12.2	12.5	-25%	-1%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	131	134	165	187	222	271	288	313	NA	14%
CPU Revenue	NA	NA	102	97	116	128	156	190	209	233	NA	15%
Workstation Revenue	NA	NA	4	6	3	9	6	5	3	3	NA	-3%
Peripheral Revenue	NA	NA	25	30	46	50	60	76	75	77	NA	11%
Software Revenue	NA	NA	66	100	121	147	175	207	223	243	NA	15%
Bundled	NA	NA	42	28	35	50	59	74	71	70	NA	15%
Unbundled	NA	NA	25	72	85	97	116	133	152	173	NA	15%
Service Revenue	4	8	13	38	47	56	68	84	90	98	84%	16%
Total Revenue	60	141	205	270	334	390	465	563	601	654	54%	14%
Increase over Prior Year		136%	46%	32%	24%	17%	19%	21%	7%	9%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 10  
 TITLE: History and Forecast  
 APPLICATION: IC Layout  
 REGION: Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	107	266	370	1,091	942	1,300	1,690	2,070	2,390	2,780	72%	24%
Workstation Shipments	194	317	379	1,112	991	1,350	1,730	2,090	2,400	2,790	50%	23%
CPU Installed Base	167	433	839	1,871	2,765	3,900	5,270	6,810	8,680	10,960	102%	32%
Workstation Installed Base	332	648	1,070	2,125	3,027	4,170	5,530	7,040	8,910	11,160	74%	30%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	231.1	103.1	105.7	19.7	77.3	77.6	72.4	63.0	56.9	54.1	-24%	-7%
Hardware-Only ASP	273.8	235.0	46.8	26.3	25.9	22.8	19.9	17.1	14.5	13.3	-45%	-12%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	19	22	30	36	40	42	41	44	NA	8%
CPU Revenue	NA	NA	15	17	21	25	28	30	30	33	NA	9%
Workstation Revenue	NA	NA	1	2	2	4	4	3	2	1	NA	-14%
Peripheral Revenue	NA	NA	3	4	6	7	8	8	9	10	NA	9%
Software Revenue	NA	NA	19	34	31	42	51	65	82	98	NA	26%
Bundled	NA	NA	6	4	4	7	8	8	8	9	NA	17%
Unbundled	NA	NA	13	30	27	35	43	57	74	89	NA	27%
Service Revenue	4	4	2	5	11	14	16	19	22	25	26%	19%
Total Revenue	30	42	41	62	72	92	107	125	145	166	24%	18%
Increase over Prior Year		39%	-3%	50%	17%	28%	17%	16%	16%	15%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 11  
 TITLE: History and Forecast  
 APPLICATION: PCB Layout  
 REGION: Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	593	726	4,407	4,329	6,216	7,110	8,250	9,600	11,910	14,400	80%	18%
Workstation Shipments	891	884	4,690	4,634	6,542	7,410	8,500	9,770	12,010	14,440	65%	17%
CPU Installed Base	1,106	1,832	4,900	8,767	16,143	22,100	28,170	34,320	42,840	53,940	95%	27%
Workstation Installed Base	1,712	2,595	5,946	10,084	17,698	23,790	30,070	36,230	44,680	55,610	79%	26%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	115.5	199.3	95.2	44.3	71.4	70.9	66.8	62.4	57.5	55.1	-11%	-5%
Hardware-Only ASP	171.1	57.5	8.5	13.9	9.9	10.1	10.6	12.1	11.9	11.9	-51%	4%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	108	92	131	145	160	184	209	237	NA	13%
CPU Revenue	NA	NA	87	66	97	106	118	138	161	186	NA	14%
Workstation Revenue	NA	NA	8	13	5	10	10	9	6	3	NA	-9%
Peripheral Revenue	NA	NA	13	13	29	29	32	37	42	49	NA	11%
Software Revenue	NA	NA	68	100	101	124	146	171	202	233	NA	18%
Bundled	NA	NA	51	32	35	41	44	49	54	59	NA	11%
Unbundled	NA	NA	17	68	66	84	102	123	149	174	NA	21%
Service Revenue	11	12	21	38	40	47	54	64	76	88	39%	17%
Total Revenue	85	100	209	229	272	316	360	419	487	559	34%	15%
Increase over Prior Year		17%	110%	10%	19%	16%	14%	16%	16%	15%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 12  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Benelux  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	1,102	3,272	4,847	7,938	10,240	12,300	14,170	15,710	17,060	NA	17%
Workstation Shipments	NA	1,431	3,974	5,942	9,483	11,350	13,280	14,940	16,400	17,690	NA	13%
CPU Installed Base	NA	1,102	3,323	7,310	16,776	26,130	36,500	47,250	59,530	73,170	NA	34%
Workstation Installed Base	NA	1,431	4,144	8,580	20,493	30,940	42,170	53,360	66,010	79,960	NA	31%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	242.9	126.6	36.8	40.3	32.4	29.8	26.5	25.2	24.9	NA	-9%
Hardware-Only ASP	NA	22.0	10.6	12.1	10.4	9.5	9.2	8.7	8.5	8.6	NA	-4%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	99	79	139	154	170	179	188	201	NA	8%
CPU Revenue	NA	NA	60	54	101	117	131	140	148	158	NA	9%
Workstation Revenue	NA	NA	26	14	15	12	12	10	10	10	NA	-7%
Peripheral Revenue	NA	NA	13	11	23	25	27	29	31	33	NA	7%
Software Revenue	NA	NA	29	54	64	77	94	109	127	145	NA	18%
Bundled	NA	NA	22	17	27	28	30	30	31	32	NA	3%
Unbundled	NA	NA	8	37	36	49	64	79	96	113	NA	25%
Service Revenue	NA	9	11	34	41	46	53	59	66	73	NA	12%
Total Revenue	NA	81	136	176	243	277	317	347	381	419	NA	12%
Increase over Prior Year		NA	68%	29%	39%	14%	15%	9%	10%	10%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 13  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Benelux  
 PLATFORM: Technical Workstation

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	138	407	1,098	2,610	3,790	5,130	6,600	7,890	9,130	NA	28%
Workstation Shipments	NA	138	407	1,098	2,610	3,790	5,130	6,600	7,890	9,130	NA	28%
CPU Installed Base	NA	138	529	1,548	4,233	7,940	12,820	18,790	26,040	34,540	NA	52%
Workstation Installed Base	NA	138	529	1,548	4,233	7,940	12,820	18,790	26,040	34,540	NA	52%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	85.4	79.2	38.1	28.9	27.8	25.8	24.0	23.2	23.3	NA	-4%
Hardware-Only ASP	NA	38.8	32.5	24.9	20.3	18.5	16.8	15.2	13.8	13.2	NA	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	19	27	59	81	100	116	129	144	NA	19%
CPU Revenue	NA	NA	15	21	48	66	81	94	105	117	NA	20%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	4	5	12	15	19	22	24	27	NA	18%
Software Revenue	NA	NA	10	30	29	43	60	78	96	115	NA	31%
Bundled	NA	NA	8	11	9	14	17	20	22	24	NA	21%
Unbundled	NA	NA	2	19	20	29	43	57	74	90	NA	35%
Service Revenue	NA	1	2	15	23	31	40	48	56	63	NA	23%
Total Revenue	NA	11	32	72	113	156	200	242	280	322	NA	23%
Increase over Prior Year		NA	176%	128%	57%	38%	29%	21%	16%	15%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 14  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Benelux  
 PLATFORM: Host-Dependent/Server

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	75	123	274	581	470	450	390	370	360	NA	-9%
Workstation Shipments	NA	405	874	1,369	2,126	1,590	1,430	1,150	1,060	990	NA	-14%
CPU Installed Base	NA	75	202	448	1,053	1,520	1,950	2,270	2,580	2,870	NA	22%
Workstation Installed Base	NA	405	1,022	1,719	4,770	6,330	7,620	8,380	9,060	9,650	NA	15%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	665.8	656.0	173.6	121.5	110.3	103.1	96.5	90.9	85.1	NA	-7%
Hardware-Only ASP	NA	861.6	467.4	233.5	193.4	175.2	163.1	153.7	151.0	145.7	NA	-6%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	64	39	60	46	42	34	32	31	NA	-12%
CPU Revenue	NA	NA	29	20	34	26	23	18	17	16	NA	-14%
Workstation Revenue	NA	NA	26	14	15	12	12	10	10	10	NA	-7%
Peripheral Revenue	NA	NA	9	5	11	8	8	6	6	5	NA	-14%
Software Revenue	NA	NA	15	17	26	21	20	17	16	15	NA	-10%
Bundled	NA	NA	11	5	17	13	12	9	8	7	NA	-16%
Unbundled	NA	NA	3	12	9	8	8	7	8	8	NA	-2%
Service Revenue	NA	8	8	18	17	13	12	10	9	8	NA	-14%
Total Revenue	NA	62	87	83	101	81	74	61	57	55	NA	-12%
Increase over Prior Year		NA	39%	-4%	23%	-20%	-9%	-18%	-6%	-4%		

Source: Dataquest  
 April 1989

Forecasts



TABLE NUMBER: 15  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Benelux  
 PLATFORM: Personal Computer

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	888	2,742	3,474	4,747	5,980	6,710	7,190	7,450	7,570	NA	10%
Workstation Shipments	NA	888	2,693	3,474	4,747	5,980	6,710	7,190	7,450	7,570	NA	10%
CPU Installed Base	NA	888	2,592	5,314	11,490	16,670	21,730	26,190	30,920	35,770	NA	25%
Workstation Installed Base	NA	888	2,592	5,314	11,490	16,670	21,730	26,190	30,920	35,770	NA	25%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	33.0	19.5	4.3	6.3	7.3	5.6	4.6	4.2	3.9	NA	-9%
Hardware-Only ASP	NA	5.6	3.7	3.8	4.2	4.2	4.2	4.0	3.7	3.5	NA	-4%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	17	13	20	26	28	28	27	26	NA	6%
CPU Revenue	NA	NA	16	13	19	25	27	27	26	25	NA	5%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	1	0	0	1	1	1	1	1	NA	33%
Software Revenue	NA	NA	4	7	9	13	14	15	15	16	NA	13%
Bundled	NA	NA	2	1	1	1	1	1	1	0	NA	-12%
Unbundled	NA	NA	2	6	8	12	13	14	15	15	NA	14%
Service Revenue	NA	0	1	1	1	1	1	1	1	1	NA	13%
Total Revenue	NA	7	18	21	29	40	43	45	44	43	NA	8%
Increase over Prior Year		NA	147%	15%	39%	38%	8%	2%	-2%	-2%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 16  
 TITLE: History and Forecast  
 APPLICATION: Mechanical  
 REGION: Benelux  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	622	1,726	2,775	5,172	6,580	7,800	8,770	9,570	10,230	NA	15%
Workstation Shipments	NA	887	2,351	3,678	6,471	7,520	8,640	9,430	10,190	10,800	NA	11%
CPU Installed Base	NA	622	1,756	3,464	10,096	16,200	22,910	29,660	37,210	45,420	NA	35%
Workstation Installed Base	NA	887	2,426	4,489	13,199	20,210	27,660	34,810	42,710	51,220	NA	31%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	303.8	145.9	36.6	41.5	31.6	28.9	25.2	23.4	22.4	NA	-12%
Hardware-Only ASP	NA	18.0	11.7	12.7	10.4	9.8	9.6	9.2	9.2	9.4	NA	-2%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	68	48	92	100	110	113	118	124	NA	6%
CPU Revenue	NA	NA	37	30	67	76	85	88	91	95	NA	7%
Workstation Revenue	NA	NA	21	10	11	9	9	8	8	9	NA	-4%
Peripheral Revenue	NA	NA	9	7	15	15	17	17	18	20	NA	6%
Software Revenue	NA	NA	16	28	37	44	54	62	73	84	NA	18%
Bundled	NA	NA	14	9	18	17	18	17	17	18	NA	-1%
Unbundled	NA	NA	2	19	19	26	36	45	55	66	NA	29%
Service Revenue	NA	6	8	22	27	30	35	38	42	47	NA	12%
Total Revenue	NA	53	89	106	155	174	199	212	233	254	NA	10%
Increase over Prior Year		NA	70%	19%	46%	12%	15%	7%	10%	9%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 17  
 TITLE: History and Forecast  
 APPLICATION: AEC  
 REGION: Benelux  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	248	717	975	1,351	1,980	2,410	2,850	3,220	3,550	NA	21%
Workstation Shipments	NA	284	741	1,045	1,494	2,080	2,490	2,900	3,260	3,570	NA	19%
CPU Installed Base	NA	248	795	2,116	3,186	4,960	6,950	9,090	11,600	14,440	NA	35%
Workstation Installed Base	NA	284	878	2,243	3,484	5,350	7,410	9,570	12,090	14,920	NA	34%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	227.7	152.2	44.2	49.6	41.1	39.3	38.0	36.9	36.7	NA	-6%
Hardware-Only ASP	NA	14.6	6.9	6.2	7.0	6.7	6.1	5.4	4.9	4.5	NA	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	12	11	20	25	27	29	30	31	NA	10%
CPU Revenue	NA	NA	8	8	15	20	22	24	25	26	NA	12%
Workstation Revenue	NA	NA	3	1	2	2	1	1	1	1	NA	-24%
Peripheral Revenue	NA	NA	1	1	2	3	3	4	4	5	NA	13%
Software Revenue	NA	NA	3	7	7	9	11	13	14	16	NA	18%
Bundled	NA	NA	2	2	2	3	3	3	3	3	NA	5%
Unbundled	NA	NA	1	4	5	7	8	10	11	13	NA	22%
Service Revenue	NA	1	1	5	6	7	8	8	9	9	NA	10%
Total Revenue	NA	9	15	22	33	41	46	50	53	57	NA	12%
Increase over Prior Year		NA	65%	46%	49%	26%	12%	9%	5%	8%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 18  
 TITLE: History and Forecast  
 APPLICATION: Mapping  
 REGION: Benelux  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	5	55	130	150	230	300	370	440	510	NA	28%
Workstation Shipments	NA	19	78	172	206	270	340	400	460	530	NA	21%
CPU Installed Base	NA	5	43	141	336	560	830	1,130	1,500	1,950	NA	42%
Workstation Installed Base	NA	19	81	202	473	730	1,040	1,360	1,750	2,200	NA	36%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	389.0	264.9	63.0	118.5	73.1	68.7	64.3	60.3	57.9	NA	-13%
Hardware-Only ASP	NA	397.1	24.3	39.0	20.7	16.3	13.9	11.1	9.3	8.5	NA	-16%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	4	5	7	7	8	9	11	13	NA	13%
CPU Revenue	NA	NA	2	3	5	5	6	7	8	10	NA	16%
Workstation Revenue	NA	NA	1	1	1	1	1	1	1	0	NA	-16%
Peripheral Revenue	NA	NA	1	1	1	1	1	2	2	2	NA	13%
Software Revenue	NA	NA	1	2	2	3	4	5	6	6	NA	22%
Bundled	NA	NA	1	1	1	1	1	2	2	2	NA	14%
Unbundled	NA	NA	0	1	1	2	3	3	4	4	NA	26%
Service Revenue	NA	0	1	2	2	2	2	3	3	4	NA	16%
Total Revenue	NA	3	6	9	11	12	15	17	20	23	NA	15%
Increase over Prior Year		NA	123%	56%	25%	12%	21%	14%	14%	16%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 19  
 TITLE: History and Forecast  
 APPLICATION: Electronic Design Automation  
 REGION: Benelux  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	227	775	967	1,265	1,450	1,780	2,180	2,480	2,780	NA	17%
Workstation Shipments	NA	242	804	1,047	1,311	1,480	1,820	2,200	2,490	2,780	NA	16%
CPU Installed Base	NA	227	729	1,589	3,157	4,420	5,820	7,370	9,220	11,370	NA	29%
Workstation Installed Base	NA	242	758	1,646	3,337	4,640	6,060	7,620	9,470	11,610	NA	28%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	113.8	68.0	29.5	26.9	25.9	23.2	20.5	20.2	20.5	NA	-5%
Hardware-Only ASP	NA	42.6	11.6	15.6	14.5	12.7	12.1	12.7	12.3	12.2	NA	-3%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	16	16	20	21	24	27	30	33	NA	10%
CPU Revenue	NA	NA	13	12	15	15	17	20	23	26	NA	12%
Workstation Revenue	NA	NA	1	1	1	1	1	1	1	0	NA	-16%
Peripheral Revenue	NA	NA	2	2	5	5	5	6	6	7	NA	8%
Software Revenue	NA	NA	10	18	18	21	25	30	35	40	NA	18%
Bundled	NA	NA	5	5	6	7	8	9	9	10	NA	11%
Unbundled	NA	NA	4	13	12	14	17	21	25	30	NA	21%
Service Revenue	NA	1	2	5	7	7	8	10	12	13	NA	15%
Total Revenue	NA	17	27	39	45	50	57	68	76	86	NA	14%
Increase over Prior Year		NA	57%	46%	16%	10%	15%	19%	13%	13%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 20  
 TITLE: History and Forecast  
 APPLICATION: Electronic CAE  
 REGION: Benelux  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	166	448	597	793	890	1,130	1,410	1,550	1,680	NA	16%
Workstation Shipments	NA	170	456	648	798	900	1,140	1,420	1,550	1,680	NA	16%
CPU Installed Base	NA	166	443	969	1,952	2,720	3,610	4,650	5,820	7,120	NA	30%
Workstation Installed Base	NA	170	452	989	2,026	2,810	3,700	4,740	5,900	7,200	NA	29%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	75.6	49.1	24.3	16.3	16.3	14.3	13.1	12.3	12.0	NA	-6%
Hardware-Only ASP	NA	33.8	12.0	14.9	14.9	12.8	11.7	12.4	12.2	12.4	NA	-4%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	8	9	9	10	11	13	14	16	NA	11%
CPU Revenue	NA	NA	6	7	7	7	8	10	11	12	NA	13%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	-17%
Peripheral Revenue	NA	NA	1	1	2	2	3	3	3	3	NA	6%
Software Revenue	NA	NA	4	7	8	9	10	12	13	14	NA	13%
Bundled	NA	NA	2	2	3	3	4	5	5	5	NA	10%
Unbundled	NA	NA	2	5	5	5	6	7	8	9	NA	15%
Service Revenue	NA	0	1	3	3	3	3	4	5	5	NA	12%
Total Revenue	NA	9	12	18	20	21	25	30	32	35	NA	12%
Increase over Prior Year		NA	39%	53%	9%	6%	15%	20%	8%	10%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 21  
 TITLE: History and forecast  
 APPLICATION: IC Layout  
 REGION: Benelux  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	15	23	73	79	110	140	170	190	220	NA	23%
Workstation Shipments	NA	18	20	74	88	110	140	170	190	220	NA	20%
CPU Installed Base	NA	15	40	109	188	290	410	540	700	890	NA	36%
Workstation Installed Base	NA	18	40	111	199	310	430	570	730	920	NA	36%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	102.8	99.8	21.8	26.6	24.3	22.6	20.9	19.4	19.0	NA	-7%
Hardware-Only ASP	NA	248.6	46.2	23.5	26.4	22.3	19.5	16.8	14.3	13.0	NA	-13%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	1	1	2	2	2	2	2	3	NA	9%
CPU Revenue	NA	NA	1	1	1	1	2	2	2	2	NA	10%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	-7%
Peripheral Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	8%
Software Revenue	NA	NA	2	4	3	4	5	7	8	10	NA	26%
Bundled	NA	NA	0	0	0	0	1	1	1	1	NA	18%
Unbundled	NA	NA	2	4	3	4	5	6	8	9	NA	27%
Service Revenue	NA	0	0	0	1	1	1	2	2	2	NA	21%
Total Revenue	NA	3	3	6	6	7	9	11	13	15	NA	21%
Increase over Prior Year		NA	9%	80%	2%	26%	19%	22%	21%	17%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 22  
 TITLE: History and Forecast  
 APPLICATION: PCB Layout  
 REGION: Benelux  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	=====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	46	303	297	393	450	520	600	740	880	NA	17%
Workstation Shipments	NA	54	328	325	425	470	540	610	740	880	NA	16%
CPU Installed Base	NA	46	246	511	1,017	1,410	1,800	2,180	2,700	3,370	NA	27%
Workstation Installed Base	NA	54	266	546	1,112	1,520	1,930	2,310	2,830	3,490	NA	26%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	212.7	93.0	40.0	60.4	56.8	54.2	51.3	47.9	46.4	NA	-5%
Hardware-Only ASP	NA	56.8	8.4	15.1	11.8	10.1	10.6	12.0	11.8	11.7	NA	-0%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	7	6	9	10	11	12	13	15	NA	10%
CPU Revenue	NA	NA	5	4	7	7	8	9	10	12	NA	11%
Workstation Revenue	NA	NA	1	1	0	0	0	0	0	0	NA	-20%
Peripheral Revenue	NA	NA	1	1	2	2	2	3	3	3	NA	9%
Software Revenue	NA	NA	4	6	7	8	9	11	13	15	NA	18%
Bundled	NA	NA	3	2	3	3	3	3	4	4	NA	11%
Unbundled	NA	NA	1	4	4	5	6	8	9	11	NA	21%
Service Revenue	NA	1	1	3	3	3	4	4	5	6	NA	15%
Total Revenue	NA	5	11	15	19	21	24	27	32	36	NA	14%
Increase over Prior Year		NA	112%	28%	30%	10%	14%	16%	16%	14%		

Source: Dataquest  
 April 1989

Forecasts



TABLE NUMBER: 23  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: France  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	3,337	8,390	10,613	13,045	17,300	20,950	24,400	27,290	29,800	NA	18%
Workstation Shipments	NA	4,309	10,450	12,674	14,977	18,760	22,240	25,420	28,240	30,660	NA	15%
CPU Installed Base	NA	3,337	9,163	19,084	34,311	49,270	65,530	82,390	102,150	124,410	NA	29%
Workstation Installed Base	NA	4,309	11,541	23,341	41,456	57,790	74,990	92,040	111,910	134,200	NA	26%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	220.5	131.1	60.6	84.0	68.3	61.4	52.6	49.2	47.4	NA	-11%
Hardware-Only ASP	NA	17.7	9.8	11.5	11.9	9.7	9.3	8.8	8.6	8.6	NA	-6%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	229	231	324	342	369	383	398	417	NA	5%
CPU Revenue	NA	NA	139	145	216	247	274	289	303	318	NA	8%
Workstation Revenue	NA	NA	60	52	35	28	26	22	21	21	NA	-10%
Peripheral Revenue	NA	NA	30	34	73	66	70	72	74	77	NA	1%
Software Revenue	NA	NA	77	123	127	159	191	220	255	289	NA	18%
Bundled	NA	NA	48	45	53	61	65	66	68	69	NA	5%
Unbundled	NA	NA	29	78	74	98	126	154	187	220	NA	24%
Service Revenue	NA	21	29	66	82	93	105	115	126	138	NA	11%
Total Revenue	NA	224	326	416	531	593	665	718	779	844	NA	10%
Increase over Prior Year		NA	45%	28%	28%	12%	12%	8%	8%	8%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 24  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: France  
 PLATFORM: Technical Workstation

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	478	874	1,797	3,164	5,190	7,200	9,520	11,720	13,880	NA	34%
Workstation Shipments	NA	478	874	1,797	3,164	5,190	7,200	9,520	11,720	13,880	NA	34%
CPU Installed Base	NA	478	1,335	3,141	6,254	11,250	17,940	26,400	37,060	49,870	NA	51%
Workstation Installed Base	NA	478	1,335	3,141	6,254	11,250	17,940	26,400	37,060	49,870	NA	51%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	82.8	74.4	45.3	52.8	49.5	46.0	42.6	40.7	40.3	NA	-5%
Hardware-Only ASP	NA	36.3	33.2	25.3	21.1	19.1	17.4	15.7	14.3	13.6	NA	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	38	50	106	160	196	231	255	281	NA	22%
CPU Revenue	NA	NA	31	41	85	129	158	184	204	225	NA	22%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	7	9	21	31	38	47	51	57	NA	22%
Software Revenue	NA	NA	23	56	60	92	125	160	196	232	NA	31%
Bundled	NA	NA	18	22	21	32	39	46	49	52	NA	20%
Unbundled	NA	NA	6	34	39	59	86	115	147	180	NA	36%
Service Revenue	NA	5	6	24	38	58	74	89	103	116	NA	25%
Total Revenue	NA	40	68	131	205	310	395	480	554	630	NA	25%
Increase over Prior Year		NA	69%	93%	57%	51%	28%	22%	15%	14%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 25  
 TITLE: History and forecast  
 APPLICATION: All Applications  
 REGION: France  
 PLATFORM: Host-Dependent/Server

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	229	287	621	552	470	450	400	380	380	NA	-7%
Workstation Shipments	NA	1,200	2,478	2,683	2,483	1,930	1,740	1,420	1,330	1,250	NA	-13%
CPU Installed Base	NA	229	522	1,190	1,687	2,140	2,530	2,770	2,990	3,210	NA	14%
Workstation Installed Base	NA	1,200	2,900	5,448	8,832	10,660	12,000	12,420	12,740	12,990	NA	8%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	583.7	636.6	260.2	538.3	455.1	436.6	409.9	409.8	404.1	NA	-6%
Hardware-Only ASP	NA	862.2	503.7	257.9	213.4	189.2	175.9	165.9	161.8	154.8	NA	-6%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	148	142	177	130	115	93	86	80	NA	-15%
CPU Revenue	NA	NA	67	68	91	68	60	48	44	41	NA	-15%
Workstation Revenue	NA	NA	60	52	35	28	26	22	21	21	NA	-10%
Peripheral Revenue	NA	NA	21	23	50	34	29	23	20	18	NA	-19%
Software Revenue	NA	NA	45	52	54	42	39	33	32	31	NA	-10%
Bundled	NA	NA	26	20	31	27	25	20	18	17	NA	-11%
Unbundled	NA	NA	19	32	23	15	14	13	13	14	NA	-9%
Service Revenue	NA	16	21	39	42	32	28	22	21	19	NA	-15%
Total Revenue	NA	163	214	232	268	204	182	148	138	130	NA	-14%
Increase over Prior Year		NA	31%	8%	16%	-24%	-11%	-19%	-7%	-6%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 26  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: France  
 PLATFORM: Personal Computer

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	2,631	7,229	8,194	9,329	11,640	13,300	14,480	15,190	15,530	NA	11%
Workstation Shipments	NA	2,631	7,098	8,194	9,329	11,640	13,300	14,480	15,190	15,530	NA	11%
CPU Installed Base	NA	2,631	7,305	14,752	26,370	35,880	45,050	53,230	62,110	71,340	NA	22%
Workstation Installed Base	NA	2,631	7,305	14,752	26,370	35,880	45,050	53,230	62,110	71,340	NA	22%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	36.4	19.8	9.4	7.5	7.6	6.9	6.4	6.0	5.5	NA	-6%
Hardware-Only ASP	NA	5.6	3.8	3.8	4.3	4.4	4.3	4.1	3.8	3.6	NA	-3%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	44	39	42	52	58	60	58	56	NA	6%
CPU Revenue	NA	NA	42	37	40	50	56	57	55	52	NA	5%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	2	2	1	2	2	2	3	3	NA	16%
Software Revenue	NA	NA	8	16	14	25	27	27	27	26	NA	13%
Bundled	NA	NA	4	4	2	1	1	1	1	0	NA	-22%
Unbundled	NA	NA	4	12	12	24	26	27	26	26	NA	15%
Service Revenue	NA	0	2	3	2	3	3	3	3	3	NA	13%
Total Revenue	NA	21	44	54	57	80	88	90	87	84	NA	8%
Increase over Prior Year		NA	109%	22%	7%	39%	10%	2%	-3%	-3%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 27  
 TITLE: History and Forecast  
 APPLICATION: Mechanical  
 REGION: France  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	1,855	4,127	5,492	7,776	10,170	12,150	13,800	15,110	16,210	NA	16%
Workstation Shipments	NA	2,633	5,755	7,134	9,337	11,310	13,180	14,630	15,920	16,990	NA	13%
CPU Installed Base	NA	1,855	4,678	8,900	18,708	27,660	37,360	47,120	58,190	70,350	NA	30%
Workstation Installed Base	NA	2,633	6,543	12,443	24,343	34,370	44,850	54,780	66,010	78,300	NA	26%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	289.3	174.4	75.8	115.2	84.9	74.8	62.1	56.8	53.6	NA	-14%
Hardware-Only ASP	NA	14.4	10.9	13.0	12.7	10.4	10.1	9.6	9.6	9.9	NA	-5%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	148	154	227	227	240	238	247	256	NA	2%
CPU Revenue	NA	NA	81	91	147	162	176	179	185	192	NA	5%
Workstation Revenue	NA	NA	48	43	29	22	20	18	18	19	NA	-8%
Peripheral Revenue	NA	NA	19	21	51	43	44	42	44	45	NA	-2%
Software Revenue	NA	NA	44	64	70	87	106	120	140	160	NA	18%
Bundled	NA	NA	27	28	38	41	42	40	42	42	NA	2%
Unbundled	NA	NA	18	36	33	46	64	80	98	117	NA	29%
Service Revenue	NA	13	17	42	54	59	66	70	77	84	NA	9%
Total Revenue	NA	143	204	257	345	372	412	428	464	499	NA	8%
Increase over Prior Year		NA	43%	26%	35%	8%	11%	4%	8%	8%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 28  
 TITLE: History and Forecast  
 APPLICATION: AEC  
 REGION: France  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	746	1,934	2,595	2,967	4,310	5,280	6,300	7,190	7,910	NA	22%
Workstation Shipments	NA	855	1,994	2,723	3,134	4,480	5,410	6,390	7,240	7,950	NA	20%
CPU Installed Base	NA	746	2,219	5,696	7,946	11,680	15,810	20,260	25,600	31,660	NA	32%
Workstation Installed Base	NA	855	2,457	6,004	8,475	12,380	16,600	21,080	26,410	32,450	NA	31%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	222.6	184.9	28.1	35.9	44.8	41.5	39.2	37.4	36.8	NA	0%
Hardware-Only ASP	NA	12.1	6.5	5.6	7.0	6.6	6.0	5.4	4.9	4.6	NA	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	29	22	33	47	51	55	56	58	NA	12%
CPU Revenue	NA	NA	20	17	26	39	44	48	49	51	NA	15%
Workstation Revenue	NA	NA	6	2	3	3	3	2	1	1	NA	-18%
Peripheral Revenue	NA	NA	3	2	5	5	5	5	6	6	NA	6%
Software Revenue	NA	NA	5	9	9	15	17	19	21	24	NA	20%
Bundled	NA	NA	4	3	3	6	6	6	6	6	NA	17%
Unbundled	NA	NA	2	6	6	9	11	13	15	18	NA	22%
Service Revenue	NA	3	3	6	8	12	13	14	14	15	NA	15%
Total Revenue	NA	26	34	35	50	74	81	88	92	97	NA	14%
Increase over Prior Year		NA	30%	4%	43%	47%	10%	8%	4%	6%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 29  
 TITLE: History and Forecast  
 APPLICATION: Mapping  
 REGION: France  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	10	156	229	301	490	630	780	920	1,050	NA	28%
Workstation Shipments	NA	48	218	258	414	570	710	850	970	1,090	NA	21%
CPU Installed Base	NA	10	122	337	687	1,140	1,700	2,340	3,120	4,030	NA	42%
Workstation Installed Base	NA	48	223	468	930	1,470	2,090	2,780	3,580	4,510	NA	37%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	386.5	189.7	59.4	109.4	72.2	66.8	61.8	57.2	54.3	NA	-13%
Hardware-Only ASP	NA	355.4	21.3	34.8	23.1	14.4	12.5	10.4	9.0	8.4	NA	-18%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	9	9	12	12	14	15	17	19	NA	10%
CPU Revenue	NA	NA	5	6	8	9	11	12	14	16	NA	14%
Workstation Revenue	NA	NA	3	2	2	1	1	1	1	1	NA	-20%
Peripheral Revenue	NA	NA	1	1	2	2	2	2	2	3	NA	3%
Software Revenue	NA	NA	2	2	3	4	5	6	7	8	NA	24%
Bundled	NA	NA	2	1	1	2	2	2	3	3	NA	20%
Unbundled	NA	NA	1	1	2	2	3	4	4	5	NA	26%
Service Revenue	NA	1	2	2	3	3	3	4	4	5	NA	12%
Total Revenue	NA	5	13	13	18	19	22	25	28	32	NA	13%
Increase over Prior Year		NA	153%	2%	35%	6%	19%	13%	12%	14%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 30  
 TITLE: History and Forecast  
 APPLICATION: Electronic Design Automation  
 REGION: France  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	725	2,173	2,296	2,001	2,340	2,890	3,520	4,080	4,630	NA	18%
Workstation Shipments	NA	774	2,483	2,559	2,092	2,400	2,940	3,550	4,100	4,640	NA	17%
CPU Installed Base	NA	725	2,143	4,152	6,970	8,790	10,650	12,670	15,240	18,370	NA	21%
Workstation Installed Base	NA	774	2,318	4,427	7,708	9,580	11,450	13,410	15,900	18,940	NA	20%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	108.4	66.0	45.1	53.2	48.5	45.9	41.6	39.8	39.6	NA	-6%
Hardware-Only ASP	NA	34.2	10.5	14.4	16.4	13.5	12.7	13.3	12.7	12.6	NA	-5%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	44	47	52	56	64	75	78	84	NA	10%
CPU Revenue	NA	NA	34	31	35	38	43	51	55	60	NA	11%
Workstation Revenue	NA	NA	3	5	2	2	2	1	1	1	NA	-18%
Peripheral Revenue	NA	NA	7	11	15	16	19	22	22	23	NA	9%
Software Revenue	NA	NA	25	49	45	53	63	75	86	97	NA	17%
Bundled	NA	NA	16	14	12	13	15	17	17	18	NA	9%
Unbundled	NA	NA	9	35	33	40	48	58	69	80	NA	19%
Service Revenue	NA	4	8	16	18	20	23	28	31	35	NA	14%
Total Revenue	NA	50	76	111	118	129	150	177	195	216	NA	13%
Increase over Prior Year		NA	50%	46%	6%	9%	17%	18%	10%	10%		

Source: Dataquest  
 April 1989

Forecasts



TABLE NUMBER: 31  
 TITLE: History and Forecast  
 APPLICATION: Electronic CAE  
 REGION: France  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	545	1,340	1,397	1,202	1,390	1,770	2,210	2,490	2,740	NA	18%
Workstation Shipments	NA	553	1,362	1,590	1,234	1,410	1,790	2,220	2,490	2,740	NA	17%
CPU Installed Base	NA	545	1,394	2,609	4,329	5,370	6,490	7,770	9,320	11,130	NA	21%
Workstation Installed Base	NA	553	1,415	2,662	4,598	5,660	6,780	8,050	9,590	11,370	NA	20%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	77.6	44.5	36.2	40.2	35.6	34.5	32.3	30.2	29.3	NA	-6%
Hardware-Only ASP	NA	27.6	10.8	14.0	16.2	13.5	12.1	12.8	12.5	12.7	NA	-5%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	23	25	26	29	34	41	42	44	NA	11%
CPU Revenue	NA	NA	18	17	17	17	21	26	28	30	NA	12%
Workstation Revenue	NA	NA	1	1	1	1	1	1	0	0	NA	-11%
Peripheral Revenue	NA	NA	4	7	9	10	12	15	14	14	NA	10%
Software Revenue	NA	NA	12	23	26	28	34	40	44	48	NA	13%
Bundled	NA	NA	7	6	7	6	8	10	9	9	NA	6%
Unbundled	NA	NA	5	17	19	22	26	30	34	39	NA	15%
Service Revenue	NA	2	4	8	9	10	12	14	15	16	NA	13%
Total Revenue	NA	28	39	56	63	66	79	96	101	108	NA	11%
Increase over Prior Year		NA	40%	46%	11%	6%	19%	21%	6%	7%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 32  
 TITLE: History and Forecast  
 APPLICATION: IC Layout  
 REGION: France  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	=====	====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	49	57	157	120	160	210	260	300	340	NA	23%
Workstation Shipments	NA	59	66	166	122	170	210	260	300	340	NA	23%
CPU Installed Base	NA	49	114	266	378	520	690	880	1,100	1,370	NA	29%
Workstation Installed Base	NA	59	128	288	408	550	720	900	1,120	1,380	NA	28%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	106.2	97.4	33.7	91.9	88.4	82.8	71.0	63.1	59.6	NA	-8%
Hardware-Only ASP	NA	220.4	55.6	29.0	29.7	25.2	21.8	18.2	15.2	13.8	NA	-14%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	3	4	4	5	6	6	6	6	NA	7%
CPU Revenue	NA	NA	2	3	3	4	4	4	4	4	NA	8%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	-25%
Peripheral Revenue	NA	NA	1	1	1	1	1	2	2	2	NA	9%
Software Revenue	NA	NA	3	9	5	7	8	10	13	16	NA	27%
Bundled	NA	NA	1	1	0	1	1	1	1	1	NA	18%
Unbundled	NA	NA	2	8	4	6	7	9	12	15	NA	27%
Service Revenue	NA	1	0	1	2	2	3	3	4	4	NA	18%
Total Revenue	NA	8	7	14	12	15	17	20	23	26	NA	18%
Increase over Prior Year		NA	-10%	95%	-16%	26%	16%	15%	16%	15%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 33  
 TITLE: History and Forecast  
 APPLICATION: PCB Layout  
 REGION: France  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	131	776	742	679	790	910	1,050	1,300	1,550	NA	18%
Workstation Shipments	NA	161	1,055	803	735	830	940	1,070	1,310	1,550	NA	16%
CPU Installed Base	NA	131	635	1,277	2,263	2,890	3,470	4,020	4,820	5,870	NA	21%
Workstation Installed Base	NA	161	775	1,477	2,702	3,370	3,950	4,460	5,200	6,190	NA	18%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	235.4	120.3	61.9	80.4	76.1	72.7	68.8	64.1	61.9	NA	-5%
Hardware-Only ASP	NA	44.6	7.6	12.0	13.7	10.5	11.0	12.5	12.3	12.2	NA	-2%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	17	17	21	22	24	27	30	34	NA	10%
CPU Revenue	NA	NA	13	12	15	16	18	20	23	26	NA	11%
Workstation Revenue	NA	NA	2	3	1	1	1	1	0	0	NA	-23%
Peripheral Revenue	NA	NA	2	2	5	5	5	6	7	8	NA	9%
Software Revenue	NA	NA	9	17	14	18	21	25	29	34	NA	19%
Bundled	NA	NA	7	7	4	5	6	6	7	7	NA	12%
Unbundled	NA	NA	2	10	10	13	15	18	22	26	NA	22%
Service Revenue	NA	2	4	7	7	8	9	10	12	14	NA	15%
Total Revenue	NA	15	30	41	43	48	54	62	72	81	NA	13%
Increase over Prior Year		NA	102%	34%	7%	10%	13%	15%	15%	13%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 34  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: German Region  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	4,582	13,168	20,310	36,788	45,590	55,370	63,520	71,710	79,530	NA	17%
Workstation Shipments	NA	6,163	16,754	22,785	39,590	49,020	58,360	65,830	73,740	81,300	NA	15%
CPU Installed Base	NA	4,582	13,943	33,167	73,427	115,580	162,880	211,160	267,630	331,910	NA	35%
Workstation Installed Base	NA	6,163	17,988	39,962	84,029	129,480	179,220	228,450	285,590	350,300	NA	33%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	173.0	109.8	51.5	69.5	69.8	62.2	53.7	49.3	46.7	NA	-8%
Hardware-Only ASP	NA	22.3	11.1	12.5	8.6	9.9	9.5	9.1	8.9	9.0	NA	1%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	434	487	719	858	924	948	991	1,051	NA	8%
CPU Revenue	NA	NA	271	313	513	612	676	709	750	802	NA	9%
Workstation Revenue	NA	NA	104	99	54	82	75	62	57	55	NA	0%
Peripheral Revenue	NA	NA	59	75	152	164	173	176	184	194	NA	5%
Software Revenue	NA	NA	156	244	294	375	444	501	571	646	NA	17%
Bundled	NA	NA	100	108	146	179	190	194	201	210	NA	8%
Unbundled	NA	NA	56	136	148	196	254	307	370	436	NA	24%
Service Revenue	NA	35	57	127	173	209	231	245	266	291	NA	11%
Total Revenue	NA	378	647	844	1,183	1,443	1,599	1,694	1,828	1,987	NA	11%
Increase over Prior Year		NA	71%	30%	40%	22%	11%	6%	8%	9%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 35  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: German Region  
 PLATFORM: Technical Workstation

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	1,157	2,717	5,740	9,598	13,370	18,850	25,310	32,380	39,680	NA	33%
Workstation Shipments	NA	1,157	2,717	5,740	9,598	13,370	18,850	25,310	32,380	39,680	NA	33%
CPU Installed Base	NA	1,157	3,788	9,423	19,054	31,890	49,250	71,370	100,560	137,050	NA	48%
Workstation Installed Base	NA	1,157	3,788	9,423	19,054	31,890	49,250	71,370	100,560	137,050	NA	48%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	74.6	72.2	44.3	52.3	49.2	46.0	43.2	40.6	39.7	NA	-5%
Hardware-Only ASP	NA	36.0	29.3	24.5	20.4	18.5	16.8	15.2	13.8	13.2	NA	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	116	167	315	370	462	550	622	704	NA	17%
CPU Revenue	NA	NA	96	135	249	293	366	435	494	561	NA	18%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	20	33	66	77	96	115	128	143	NA	17%
Software Revenue	NA	NA	54	114	158	214	288	360	434	512	NA	26%
Bundled	NA	NA	47	61	91	98	118	136	147	160	NA	12%
Unbundled	NA	NA	7	53	67	116	170	224	287	352	NA	39%
Service Revenue	NA	11	12	50	94	114	146	175	202	231	NA	20%
Total Revenue	NA	92	194	331	568	698	896	1,086	1,258	1,447	NA	21%
Increase over Prior Year		NA	111%	71%	71%	23%	28%	21%	16%	15%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 36  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: German Region  
 PLATFORM: Host-Dependent/Server

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	421	595	1,310	1,207	1,740	1,730	1,540	1,540	1,590	NA	6%
Workstation Shipments	NA	2,002	4,355	3,785	4,010	5,170	4,720	3,840	3,570	3,360	NA	-3%
CPU Installed Base	NA	421	1,071	2,537	3,530	5,240	6,840	8,050	9,260	10,530	NA	24%
Workstation Installed Base	NA	2,002	5,116	9,333	14,131	19,130	23,170	25,340	27,230	28,920	NA	15%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	491.9	499.1	211.2	378.7	347.3	319.9	296.0	273.2	253.2	NA	-8%
Hardware-Only ASP	NA	861.5	514.7	248.4	150.8	141.4	130.9	122.1	117.0	110.5	NA	-6%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	254	254	287	353	315	252	232	216	NA	-5%
CPU Revenue	NA	NA	114	117	150	189	168	135	125	117	NA	-5%
Workstation Revenue	NA	NA	104	99	54	82	75	62	57	55	NA	0%
Peripheral Revenue	NA	NA	36	39	82	83	72	55	50	44	NA	-12%
Software Revenue	NA	NA	59	82	75	104	97	81	77	75	NA	0%
Bundled	NA	NA	45	41	47	75	68	55	51	48	NA	0%
Unbundled	NA	NA	14	42	27	30	29	26	26	28	NA	0%
Service Revenue	NA	23	41	71	72	88	78	63	57	53	NA	-6%
Total Revenue	NA	256	355	401	430	545	490	396	366	344	NA	-4%
Increase over Prior Year		NA	38%	13%	7%	27%	-10%	-19%	-7%	-6%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 37  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: German Region  
 PLATFORM: Personal Computer

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	3,004	9,856	13,261	25,983	30,480	34,800	36,670	37,800	38,250	NA	8%
Workstation Shipments	NA	3,004	9,682	13,261	25,983	30,480	34,800	36,670	37,800	38,250	NA	8%
CPU Installed Base	NA	3,004	9,083	21,207	50,844	78,460	106,790	131,730	157,800	184,330	NA	29%
Workstation Installed Base	NA	3,004	9,083	21,207	50,844	78,460	106,790	131,730	157,800	184,330	NA	29%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	46.7	21.5	8.3	14.9	13.7	11.3	9.7	8.9	8.1	NA	-11%
Hardware-Only ASP	NA	5.6	3.8	3.8	4.1	4.1	4.1	3.9	3.6	3.4	NA	-4%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	64	66	118	135	147	145	138	131	NA	2%
CPU Revenue	NA	NA	61	62	114	131	142	140	131	124	NA	2%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	4	4	4	5	5	6	7	7	NA	14%
Software Revenue	NA	NA	44	47	61	56	60	60	59	59	NA	-1%
Bundled	NA	NA	8	6	7	7	4	3	3	2	NA	-21%
Unbundled	NA	NA	35	41	53	50	55	57	57	56	NA	1%
Service Revenue	NA	1	4	7	7	7	7	7	7	6	NA	-1%
Total Revenue	NA	29	98	112	185	199	213	212	204	196	NA	1%
Increase over Prior Year		NA	234%	14%	66%	7%	7%	-0%	-4%	-4%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 38  
 TITLE: History and Forecast  
 APPLICATION: Mechanical  
 REGION: German Region  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	2,519	6,502	10,338	22,241	26,680	31,830	35,640	38,840	41,720	NA	13%
Workstation Shipments	NA	3,738	9,543	12,177	24,379	29,310	34,160	37,440	40,510	43,250	NA	12%
CPU Installed Base	NA	2,519	7,092	15,796	40,896	65,830	93,480	120,900	151,510	185,010	NA	35%
Workstation Installed Base	NA	3,738	10,301	21,233	49,166	76,630	106,170	134,320	165,530	199,490	NA	32%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	208.8	132.0	62.7	70.1	72.3	64.1	53.9	49.4	46.7	NA	-8%
Hardware-Only ASP	NA	18.3	12.3	13.9	8.8	10.6	10.2	9.7	9.7	9.9	NA	2%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	273	308	472	562	593	578	596	618	NA	6%
CPU Revenue	NA	NA	156	186	333	397	430	430	444	461	NA	7%
Workstation Revenue	NA	NA	79	76	39	54	50	43	43	45	NA	3%
Peripheral Revenue	NA	NA	38	45	101	111	113	106	109	112	NA	2%
Software Revenue	NA	NA	79	130	163	209	249	274	313	353	NA	17%
Bundled	NA	NA	55	65	100	120	125	122	127	131	NA	6%
Unbundled	NA	NA	24	65	63	89	123	152	187	223	NA	29%
Service Revenue	NA	19	35	79	111	134	146	147	158	170	NA	9%
Total Revenue	NA	226	380	507	742	905	988	999	1,068	1,141	NA	9%
Increase over Prior Year		NA	68%	33%	47%	22%	9%	1%	7%	7%		

Source: Dataquest  
 April 1989

Forecasts



TABLE NUMBER: 39  
 TITLE: History and Forecast  
 APPLICATION: AEC  
 REGION: German Region  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	----	----	----	----	----	----	----	----	----	----	-----	-----
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	974	2,713	3,975	6,685	9,650	11,920	14,120	16,070	17,750	NA	22%
Workstation Shipments	NA	1,152	2,839	4,202	6,976	10,030	12,200	14,320	16,210	17,840	NA	21%
CPU Installed Base	NA	974	3,023	8,448	13,971	22,840	33,020	43,980	56,890	71,480	NA	39%
Workstation Installed Base	NA	1,152	3,411	9,010	14,875	24,120	34,540	45,590	58,530	73,100	NA	37%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	140.6	105.9	40.0	60.0	59.5	51.0	45.1	41.0	38.8	NA	-8%
Hardware-Only ASP	NA	14.8	7.2	5.9	6.4	6.3	5.8	5.2	4.7	4.4	NA	-7%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	49	44	84	106	112	115	114	117	NA	7%
CPU Revenue	NA	NA	34	33	65	82	90	95	96	100	NA	9%
Workstation Revenue	NA	NA	10	6	8	12	9	7	5	4	NA	-14%
Peripheral Revenue	NA	NA	5	5	12	13	13	13	13	14	NA	3%
Software Revenue	NA	NA	12	17	25	33	38	42	46	51	NA	16%
Bundled	NA	NA	8	8	11	15	15	15	15	15	NA	6%
Unbundled	NA	NA	5	10	13	18	23	27	31	36	NA	22%
Service Revenue	NA	5	5	12	18	23	23	23	24	25	NA	6%
Total Revenue	NA	45	62	71	127	162	173	180	184	193	NA	9%
Increase over Prior Year		NA	38%	14%	78%	28%	7%	4%	2%	5%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 40  
 TITLE: History and Forecast  
 APPLICATION: Mapping  
 REGION: German Region  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	29	243	952	983	1,360	1,760	2,150	2,530	2,950	NA	25%
Workstation Shipments	NA	127	401	1,155	1,206	1,600	1,990	2,340	2,700	3,070	NA	21%
CPU Installed Base	NA	29	198	998	2,193	3,490	5,070	6,810	8,940	11,480	NA	39%
Workstation Installed Base	NA	127	447	1,448	2,879	4,410	6,180	8,040	10,260	12,850	NA	35%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	424.4	320.7	67.8	80.4	67.9	61.8	56.4	51.5	48.3	NA	-10%
Hardware-Only ASP	NA	348.3	25.2	30.4	15.8	16.1	13.7	11.0	9.3	8.5	NA	-12%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	29	44	35	40	45	49	53	60	NA	12%
CPU Revenue	NA	NA	14	27	24	29	34	37	41	48	NA	14%
Workstation Revenue	NA	NA	11	10	4	5	5	4	3	3	NA	-9%
Peripheral Revenue	NA	NA	4	7	6	6	7	8	9	10	NA	10%
Software Revenue	NA	NA	9	14	13	18	23	27	31	35	NA	22%
Bundled	NA	NA	5	10	7	9	11	12	13	15	NA	17%
Unbundled	NA	NA	4	3	6	9	12	15	18	20	NA	26%
Service Revenue	NA	2	5	8	7	9	10	12	13	15	NA	15%
Total Revenue	NA	16	43	66	55	67	79	87	97	110	NA	15%
Increase over Prior Year		NA	166%	54%	16%	20%	18%	11%	11%	14%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 41  
 TITLE: History and Forecast  
 APPLICATION: Electronic Design Automation  
 REGION: German Region  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	=====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	1,060	3,710	5,045	6,879	7,910	9,860	11,620	14,270	17,110	NA	20%
Workstation Shipments	NA	1,146	3,972	5,251	7,030	8,080	10,010	11,720	14,320	17,130	NA	19%
CPU Installed Base	NA	1,060	3,630	7,925	16,367	23,420	31,310	39,480	50,290	63,940	NA	31%
Workstation Installed Base	NA	1,146	3,829	8,271	17,108	24,330	32,330	40,500	51,270	64,850	NA	31%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	110.2	66.3	29.9	70.3	67.6	62.7	57.5	53.2	51.2	NA	-6%
Hardware-Only ASP	NA	42.2	11.7	15.4	9.7	11.8	11.5	12.4	12.1	12.1	NA	5%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	83	91	128	150	174	206	227	256	NA	15%
CPU Revenue	NA	NA	66	67	91	105	123	147	169	194	NA	16%
Workstation Revenue	NA	NA	4	6	4	11	10	9	6	4	NA	1%
Peripheral Revenue	NA	NA	13	18	33	34	41	50	53	58	NA	12%
Software Revenue	NA	NA	56	83	93	114	135	159	181	206	NA	17%
Bundled	NA	NA	32	24	28	35	39	45	46	49	NA	12%
Unbundled	NA	NA	24	58	65	79	95	113	135	157	NA	19%
Service Revenue	NA	8	12	28	36	44	52	63	71	81	NA	18%
Total Revenue	NA	90	162	200	258	309	360	427	480	543	NA	16%
Increase over Prior Year		NA	79%	24%	29%	20%	17%	19%	12%	13%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 42  
 TITLE: History and Forecast  
 APPLICATION: Electronic CAE  
 REGION: German Region  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	746	2,129	3,057	3,233	3,690	4,880	5,770	7,040	8,340	NA	21%
Workstation Shipments	NA	759	2,176	3,163	3,280	3,710	4,900	5,790	7,050	8,350	NA	21%
CPU Installed Base	NA	746	2,113	4,555	8,946	12,090	15,790	19,650	24,790	31,220	NA	28%
Workstation Installed Base	NA	759	2,149	4,632	9,182	12,350	16,060	19,920	25,040	31,460	NA	28%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	71.6	48.6	22.8	72.1	65.7	61.0	56.6	53.0	51.6	NA	-6%
Hardware-Only ASP	NA	33.6	11.9	15.0	10.7	12.4	11.4	12.2	12.1	12.3	NA	3%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	43	48	68	76	90	110	119	131	NA	14%
CPU Revenue	NA	NA	33	35	46	52	62	76	85	97	NA	16%
Workstation Revenue	NA	NA	1	2	1	4	3	2	2	1	NA	4%
Peripheral Revenue	NA	NA	9	11	20	20	25	32	32	33	NA	10%
Software Revenue	NA	NA	26	36	45	54	63	73	79	87	NA	14%
Bundled	NA	NA	13	9	12	17	19	23	22	22	NA	12%
Unbundled	NA	NA	13	27	33	37	44	50	57	65	NA	15%
Service Revenue	NA	2	4	12	17	21	25	31	33	36	NA	16%
Total Revenue	NA	42	71	95	130	150	178	214	231	255	NA	14%
Increase over Prior Year		NA	69%	34%	37%	15%	18%	20%	8%	10%		

Source: Dataquest  
 April 1989

TABLE NUMBER: 43  
 TITLE: History and Forecast  
 APPLICATION: IC Layout  
 REGION: German Region  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	83	114	506	401	540	700	850	980	1,150	NA	23%
Workstation Shipments	NA	101	150	512	415	560	720	860	990	1,150	NA	23%
CPU Installed Base	NA	83	210	674	1,094	1,590	2,180	2,820	3,600	4,540	NA	33%
Workstation Installed Base	NA	101	241	714	1,167	1,690	2,290	2,930	3,690	4,620	NA	32%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	105.3	108.8	13.9	76.7	81.9	76.6	64.8	57.4	54.1	NA	-7%
Hardware-Only ASP	NA	219.4	47.3	23.2	22.9	22.1	19.4	16.7	14.3	13.1	NA	-11%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	6	8	12	15	17	18	17	18	NA	8%
CPU Revenue	NA	NA	5	6	9	11	12	13	13	14	NA	9%
Workstation Revenue	NA	NA	0	1	1	2	2	1	1	0	NA	-14%
Peripheral Revenue	NA	NA	1	2	3	3	3	4	4	4	NA	8%
Software Revenue	NA	NA	5	9	10	14	16	20	25	30	NA	25%
Bundled	NA	NA	2	2	2	3	3	4	4	4	NA	14%
Unbundled	NA	NA	3	7	8	10	13	17	22	26	NA	27%
Service Revenue	NA	1	1	2	4	6	7	7	9	10	NA	17%
Total Revenue	NA	13	12	19	27	35	40	45	51	58	NA	17%
Increase over Prior Year		NA	-7%	60%	42%	30%	16%	12%	13%	13%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 44  
 TITLE: History and Forecast  
 APPLICATION: PCB Layout  
 REGION: German Region  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	231	1,468	1,482	3,244	3,680	4,290	4,990	6,240	7,610	NA	19%
Workstation Shipments	NA	286	1,646	1,576	3,335	3,810	4,390	5,070	6,280	7,630	NA	18%
CPU Installed Base	NA	231	1,307	2,696	6,327	9,740	13,340	17,000	21,910	28,180	NA	35%
Workstation Installed Base	NA	286	1,439	2,926	6,759	10,300	13,980	17,650	22,540	28,770	NA	34%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	200.9	85.5	47.0	67.2	67.7	62.9	58.0	52.9	50.2	NA	-6%
Hardware-Only ASP	NA	56.8	8.5	13.9	7.2	9.8	10.3	11.9	11.8	11.7	NA	10%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	34	35	48	59	66	78	91	106	NA	17%
CPU Revenue	NA	NA	28	26	36	42	48	58	70	84	NA	18%
Workstation Revenue	NA	NA	3	4	2	6	6	5	3	2	NA	2%
Peripheral Revenue	NA	NA	3	5	11	11	12	15	18	21	NA	15%
Software Revenue	NA	NA	25	38	38	47	55	65	77	89	NA	18%
Bundled	NA	NA	17	13	13	15	17	19	21	23	NA	12%
Unbundled	NA	NA	8	24	25	32	39	46	56	66	NA	21%
Service Revenue	NA	4	8	14	14	17	20	25	30	35	NA	20%
Total Revenue	NA	35	79	86	101	124	142	168	198	230	NA	18%
Increase over Prior Year		NA	124%	9%	17%	23%	15%	18%	18%	16%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 45  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Italy  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	1,818	5,845	7,537	10,371	13,710	16,660	19,360	22,000	24,100	NA	18%
Workstation Shipments	NA	2,203	6,824	8,538	12,117	15,190	17,980	20,410	22,980	24,980	NA	16%
CPU Installed Base	NA	1,818	5,831	11,963	24,931	37,140	50,560	64,450	80,980	99,610	NA	32%
Workstation Installed Base	NA	2,203	6,912	13,795	29,119	42,770	57,360	71,900	89,020	108,140	NA	30%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	150.2	88.8	43.7	49.8	49.0	44.7	39.3	36.8	35.4	NA	-7%
Hardware-Only ASP	NA	22.4	10.5	11.8	11.1	9.9	9.4	8.8	8.5	8.5	NA	-5%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	145	141	187	230	254	267	284	302	NA	10%
CPU Revenue	NA	NA	91	93	134	173	194	206	221	234	NA	12%
Workstation Revenue	NA	NA	33	28	20	19	18	16	15	15	NA	-5%
Peripheral Revenue	NA	NA	21	20	34	38	42	45	49	53	NA	9%
Software Revenue	NA	NA	42	68	96	127	154	178	209	238	NA	20%
Bundled	NA	NA	31	26	42	52	55	56	59	61	NA	8%
Unbundled	NA	NA	11	41	53	74	99	122	150	177	NA	27%
Service Revenue	NA	10	15	39	52	69	81	90	102	113	NA	17%
Total Revenue	NA	116	216	248	333	426	489	534	595	653	NA	14%
Increase over Prior Year		NA	86%	15%	34%	28%	15%	9%	11%	10%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 46  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Italy  
 PLATFORM: Technical Workstation

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	308	1,062	1,173	2,236	4,350	6,000	7,810	9,750	11,560	NA	39%
Workstation Shipments	NA	308	1,062	1,173	2,236	4,350	6,000	7,810	9,750	11,560	NA	39%
CPU Installed Base	NA	308	1,316	2,469	4,730	8,920	14,480	21,420	30,300	40,990	NA	54%
Workstation Installed Base	NA	308	1,316	2,469	4,730	8,920	14,480	21,420	30,300	40,990	NA	54%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	81.8	67.9	54.6	41.2	38.9	36.3	33.8	32.2	31.7	NA	-5%
Hardware-Only ASP	NA	41.4	39.1	25.5	21.3	19.4	17.6	15.9	14.5	13.8	NA	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	33	40	62	111	138	162	185	207	NA	27%
CPU Revenue	NA	NA	25	32	50	92	113	132	150	167	NA	27%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	8	8	12	20	25	31	35	39	NA	27%
Software Revenue	NA	NA	17	36	42	70	97	123	154	183	NA	34%
Bundled	NA	NA	16	15	14	27	33	38	42	46	NA	27%
Unbundled	NA	NA	1	21	28	43	64	86	111	136	NA	37%
Service Revenue	NA	3	5	16	26	45	58	70	82	94	NA	30%
Total Revenue	NA	26	75	92	130	226	293	356	421	484	NA	30%
Increase over Prior Year		NA	186%	23%	41%	73%	30%	21%	18%	15%		

Source: Dataquest  
 April 1989

Forecasts



TABLE NUMBER: 47  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Italy  
 PLATFORM: Host-Dependent/Server

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	99	167	285	476	470	460	400	390	380	NA	-4%
Workstation Shipments	NA	484	1,229	1,285	2,222	1,940	1,770	1,450	1,370	1,270	NA	-11%
CPU Installed Base	NA	99	269	561	1,027	1,490	1,910	2,230	2,540	2,840	NA	23%
Workstation Installed Base	NA	484	1,350	2,394	5,215	7,120	8,710	9,680	10,580	11,380	NA	17%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	643.2	613.5	362.2	278.4	245.3	229.5	213.5	202.0	190.6	NA	-7%
Hardware-Only ASP	NA	863.0	491.9	242.2	218.2	187.9	173.7	164.2	160.9	155.7	NA	-7%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	84	75	93	81	73	60	57	53	NA	-11%
CPU Revenue	NA	NA	40	36	53	44	39	32	30	27	NA	-13%
Workstation Revenue	NA	NA	33	28	20	19	18	16	15	15	NA	-5%
Peripheral Revenue	NA	NA	11	11	20	17	16	13	12	11	NA	-12%
Software Revenue	NA	NA	20	22	40	38	35	30	29	28	NA	-7%
Bundled	NA	NA	12	9	26	24	22	17	16	14	NA	-12%
Unbundled	NA	NA	7	14	13	14	14	13	13	14	NA	1%
Service Revenue	NA	7	10	21	24	21	19	16	15	14	NA	-11%
Total Revenue	NA	79	114	121	154	139	127	106	100	95	NA	-9%
Increase over Prior Year		NA	45%	6%	28%	-10%	-9%	-17%	-5%	-5%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 48  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Italy  
 PLATFORM: Personal Computer

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	1,411	4,616	6,079	7,659	8,900	10,210	11,150	11,860	12,150	NA	10%
Workstation Shipments	NA	1,411	4,534	6,079	7,659	8,900	10,210	11,150	11,860	12,150	NA	10%
CPU Installed Base	NA	1,411	4,246	8,933	19,175	26,740	34,160	40,800	48,140	55,780	NA	24%
Workstation Installed Base	NA	1,411	4,246	8,933	19,175	26,740	34,160	40,800	48,140	55,780	NA	24%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	20.5	16.5	6.5	5.2	6.1	5.0	4.3	3.9	3.6	NA	-7%
Hardware-Only ASP	NA	5.6	3.7	3.8	4.3	4.3	4.2	4.0	3.7	3.5	NA	-4%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	28	27	32	38	43	44	43	42	NA	6%
CPU Revenue	NA	NA	27	25	30	37	41	42	41	40	NA	5%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	1	2	1	1	1	2	2	2	NA	11%
Software Revenue	NA	NA	5	9	14	19	22	24	26	27	NA	14%
Bundled	NA	NA	3	3	2	1	1	1	1	1	NA	-25%
Unbundled	NA	NA	2	6	12	18	21	24	26	27	NA	17%
Service Revenue	NA	0	1	2	2	3	4	4	5	5	NA	14%
Total Revenue	NA	11	27	35	49	61	69	73	74	74	NA	9%
Increase over Prior Year		NA	140%	30%	37%	25%	13%	6%	2%	0%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 49  
 TITLE: History and Forecast  
 APPLICATION: Mechanical  
 REGION: Italy  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	1,037	3,439	4,284	6,501	8,440	10,090	11,450	12,700	13,600	NA	16%
Workstation Shipments	NA	1,362	4,321	5,120	7,981	9,610	11,140	12,290	13,520	14,380	NA	12%
CPU Installed Base	NA	1,037	3,371	5,932	14,913	22,490	30,690	38,890	48,330	58,690	NA	32%
Workstation Installed Base	NA	1,362	4,285	7,470	18,458	27,180	36,300	45,010	54,940	65,740	NA	29%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	166.5	88.8	45.9	54.8	51.6	47.0	40.6	37.6	36.0	NA	-8%
Hardware-Only ASP	NA	18.3	11.3	12.8	11.8	10.1	9.9	9.5	9.5	9.7	NA	-4%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	104	92	127	152	167	171	181	190	NA	8%
CPU Revenue	NA	NA	61	57	91	116	130	134	141	147	NA	10%
Workstation Revenue	NA	NA	27	21	15	12	12	11	11	12	NA	-5%
Peripheral Revenue	NA	NA	15	14	21	24	26	26	29	31	NA	8%
Software Revenue	NA	NA	29	39	64	82	101	115	136	156	NA	20%
Bundled	NA	NA	23	17	32	37	38	37	39	39	NA	4%
Unbundled	NA	NA	6	22	31	45	62	78	97	116	NA	30%
Service Revenue	NA	6	10	25	36	48	56	61	70	77	NA	16%
Total Revenue	NA	69	150	157	224	282	324	347	387	423	NA	14%
Increase over Prior Year		NA	118%	5%	43%	26%	15%	7%	11%	9%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 50  
 TITLE: History and Forecast  
 APPLICATION: AEC  
 REGION: Italy  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	432	1,202	1,678	2,193	3,190	3,930	4,690	5,420	5,980	NA	22%
Workstation Shipments	NA	457	1,207	1,722	2,317	3,340	4,040	4,770	5,470	6,010	NA	21%
CPU Installed Base	NA	432	1,324	3,592	5,334	8,180	11,380	14,840	19,040	23,790	NA	35%
Workstation Installed Base	NA	457	1,394	3,706	5,571	8,560	11,860	15,390	19,620	24,380	NA	34%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	129.8	99.7	43.8	33.9	35.1	31.3	28.8	26.9	26.0	NA	-5%
Hardware-Only ASP	NA	14.7	7.0	5.9	6.9	6.7	6.1	5.5	4.9	4.6	NA	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	14	18	23	30	33	35	36	38	NA	10%
CPU Revenue	NA	NA	11	14	19	25	28	30	31	33	NA	12%
Workstation Revenue	NA	NA	2	2	2	3	2	2	1	1	NA	-11%
Peripheral Revenue	NA	NA	1	2	3	3	3	3	4	4	NA	9%
Software Revenue	NA	NA	4	9	12	17	19	22	25	28	NA	19%
Bundled	NA	NA	2	3	4	5	5	5	5	5	NA	7%
Unbundled	NA	NA	2	6	8	11	14	17	20	23	NA	23%
Service Revenue	NA	2	1	5	6	8	9	9	10	11	NA	12%
Total Revenue	NA	19	24	31	41	55	61	67	71	77	NA	13%
Increase over Prior Year		NA	28%	27%	32%	35%	11%	9%	7%	7%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 51  
 TITLE: History and Forecast  
 APPLICATION: Mapping  
 REGION: Italy  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	8	118	355	637	840	1,090	1,340	1,600	1,860	NA	24%
Workstation Shipments	NA	22	148	399	723	970	1,210	1,450	1,690	1,930	NA	22%
CPU Installed Base	NA	8	99	269	1,112	1,920	2,910	4,030	5,410	7,040	NA	45%
Workstation Installed Base	NA	22	144	352	1,288	2,230	3,340	4,550	6,010	7,700	NA	43%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	491.7	158.1	42.2	38.3	57.4	52.3	47.8	43.7	40.9	NA	1%
Hardware-Only ASP	NA	403.8	26.2	29.4	11.3	17.8	15.0	11.7	9.8	8.8	NA	-5%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	6	11	12	22	25	26	29	32	NA	22%
CPU Revenue	NA	NA	3	7	8	15	17	19	22	25	NA	26%
Workstation Revenue	NA	NA	2	3	2	3	3	2	2	2	NA	-1%
Peripheral Revenue	NA	NA	1	2	3	5	5	5	5	6	NA	17%
Software Revenue	NA	NA	2	4	6	10	13	15	18	21	NA	29%
Bundled	NA	NA	1	2	3	6	7	7	8	10	NA	31%
Unbundled	NA	NA	1	1	3	5	6	8	9	11	NA	27%
Service Revenue	NA	1	2	2	3	6	7	8	9	11	NA	30%
Total Revenue	NA	7	13	17	21	38	44	49	55	63	NA	25%
Increase over Prior Year		NA	83%	30%	21%	83%	18%	11%	13%	13%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 52  
 TITLE: History and Forecast  
 APPLICATION: Electronic Design Automation  
 REGION: Italy  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	340	1,086	1,221	1,040	1,240	1,560	1,890	2,280	2,660	NA	21%
Workstation Shipments	NA	362	1,149	1,296	1,096	1,280	1,590	1,910	2,290	2,660	NA	19%
CPU Installed Base	NA	340	1,037	2,170	3,572	4,550	5,580	6,690	8,200	10,080	NA	23%
Workstation Installed Base	NA	362	1,090	2,268	3,802	4,810	5,850	6,960	8,450	10,310	NA	22%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	93.4	65.2	33.9	49.5	44.1	40.7	36.9	35.5	35.5	NA	-6%
Hardware-Only ASP	NA	43.7	11.6	15.6	17.4	13.7	13.0	13.5	12.9	12.7	NA	-6%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	20	21	25	25	29	34	38	42	NA	11%
CPU Revenue	NA	NA	15	15	17	17	19	23	26	30	NA	12%
Workstation Revenue	NA	NA	1	2	1	2	2	1	1	1	NA	-14%
Peripheral Revenue	NA	NA	4	3	7	7	8	10	11	12	NA	11%
Software Revenue	NA	NA	7	16	15	18	21	25	30	34	NA	18%
Bundled	NA	NA	6	4	4	4	5	6	6	6	NA	11%
Unbundled	NA	NA	2	12	11	13	16	19	23	27	NA	20%
Service Revenue	NA	1	2	6	7	8	9	11	13	15	NA	15%
Total Revenue	NA	22	29	43	47	51	59	71	81	91	NA	14%
Increase over Prior Year		NA	35%	49%	9%	7%	17%	20%	14%	12%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 53  
 TITLE: History and Forecast  
 APPLICATION: Electronic CAE  
 REGION: Italy  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	262	666	784	611	710	920	1,130	1,330	1,510	NA	20%
Workstation Shipments	NA	267	680	821	621	710	920	1,130	1,330	1,510	NA	19%
CPU Installed Base	NA	262	681	1,390	2,244	2,770	3,350	3,990	4,830	5,860	NA	21%
Workstation Installed Base	NA	267	695	1,413	2,318	2,850	3,430	4,070	4,910	5,930	NA	21%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	77.4	55.8	27.9	35.4	32.7	30.4	28.2	26.5	25.9	NA	-6%
Hardware-Only ASP	NA	34.4	12.1	14.5	17.3	14.0	12.5	13.0	12.7	12.8	NA	-6%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	12	12	13	13	15	19	20	22	NA	11%
CPU Revenue	NA	NA	9	9	9	9	10	12	14	15	NA	12%
Workstation Revenue	NA	NA	0	1	0	1	0	0	0	0	NA	-14%
Peripheral Revenue	NA	NA	2	2	4	4	5	6	7	7	NA	9%
Software Revenue	NA	NA	5	7	8	9	11	13	14	16	NA	15%
Bundled	NA	NA	4	3	2	2	3	3	3	3	NA	12%
Unbundled	NA	NA	1	5	6	7	8	10	11	13	NA	16%
Service Revenue	NA	1	1	3	4	4	5	6	7	7	NA	13%
Total Revenue	NA	13	17	22	25	26	31	38	41	45	NA	13%
Increase over Prior Year		NA	30%	32%	12%	5%	18%	21%	9%	10%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 54  
 TITLE: History and Forecast  
 APPLICATION: IC Layout  
 REGION: Italy  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	25	28	90	67	100	130	160	180	220	NA	27%
Workstation Shipments	NA	29	30	91	74	100	130	160	190	220	NA	24%
CPU Installed Base	NA	25	62	150	206	290	400	510	660	840	NA	32%
Workstation Installed Base	NA	29	66	157	221	310	420	540	680	860	NA	31%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	99.9	102.8	22.0	64.8	58.4	53.7	49.1	45.6	43.9	NA	-7%
Hardware-Only ASP	NA	276.2	65.0	31.3	33.7	24.6	21.2	18.1	15.2	13.8	NA	-16%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	2	2	2	3	3	3	3	3	NA	7%
CPU Revenue	NA	NA	1	2	2	1	2	2	2	2	NA	8%
Workstation Revenue	NA	NA	0	0	0	1	1	0	0	0	NA	-9%
Peripheral Revenue	NA	NA	0	0	1	1	1	1	1	1	NA	9%
Software Revenue	NA	NA	1	5	2	3	4	5	7	8	NA	28%
Bundled	NA	NA	0	0	0	0	0	0	0	1	NA	21%
Unbundled	NA	NA	1	4	2	3	4	5	6	7	NA	28%
Service Revenue	NA	0	0	0	1	1	1	1	2	2	NA	19%
Total Revenue	NA	4	3	7	6	7	8	10	11	13	NA	18%
Increase over Prior Year		NA	-20%	134%	-21%	21%	17%	20%	19%	16%		

Source: Dataquest  
 April 1989

Forecasts



TABLE NUMBER: 55  
 TITLE: History and Forecast  
 APPLICATION: PCB Layout  
 REGION: Italy  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	54	392	347	362	440	520	600	770	930	NA	21%
Workstation Shipments	NA	66	439	385	400	460	530	620	770	930	NA	18%
CPU Installed Base	NA	54	295	630	1,122	1,480	1,830	2,190	2,700	3,390	NA	25%
Workstation Installed Base	NA	66	329	698	1,263	1,640	2,000	2,350	2,860	3,520	NA	23%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	246.0	91.0	52.6	92.2	73.8	70.4	66.6	61.9	59.7	NA	-8%
Hardware-Only ASP	NA	58.3	8.4	14.2	14.4	10.9	11.4	12.8	12.5	12.3	NA	-3%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	6	7	10	10	11	13	15	17	NA	12%
CPU Revenue	NA	NA	5	5	7	7	8	9	11	12	NA	12%
Workstation Revenue	NA	NA	1	1	1	1	1	1	0	0	NA	-17%
Peripheral Revenue	NA	NA	1	1	2	2	3	3	4	4	NA	14%
Software Revenue	NA	NA	1	4	5	5	6	7	9	10	NA	17%
Bundled	NA	NA	1	1	2	2	2	2	2	3	NA	8%
Unbundled	NA	NA	0	3	3	3	4	5	6	7	NA	22%
Service Revenue	NA	0	1	3	3	3	3	4	5	6	NA	16%
Total Revenue	NA	5	9	14	17	18	20	24	28	32	NA	14%
Increase over Prior Year		NA	93%	51%	21%	6%	14%	18%	18%	15%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 56  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Scandinavia  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	1,496	4,456	5,907	9,414	12,150	14,780	17,100	19,120	20,840	NA	17%
Workstation Shipments	NA	1,983	5,441	6,580	10,730	13,120	15,640	17,770	19,720	21,380	NA	15%
CPU Installed Base	NA	1,496	4,498	10,161	20,748	31,710	43,920	56,590	71,270	87,670	NA	33%
Workstation Installed Base	NA	1,983	5,686	12,160	24,275	36,170	49,080	62,020	76,900	93,450	NA	31%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	298.2	140.6	68.5	65.7	57.1	52.0	45.5	42.9	41.8	NA	-9%
Hardware-Only ASP	NA	29.3	12.3	12.2	9.8	9.9	9.4	9.0	8.8	8.9	NA	-2%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	135	132	200	221	241	252	263	277	NA	7%
CPU Revenue	NA	NA	83	83	140	165	185	198	209	221	NA	10%
Workstation Revenue	NA	NA	34	31	20	19	17	15	14	13	NA	-8%
Peripheral Revenue	NA	NA	18	19	40	37	39	40	41	42	NA	1%
Software Revenue	NA	NA	35	65	76	107	131	154	176	199	NA	21%
Bundled	NA	NA	27	26	28	42	47	50	52	54	NA	14%
Unbundled	NA	NA	8	39	48	65	85	103	124	145	NA	25%
Service Revenue	NA	11	16	42	49	62	71	79	86	95	NA	14%
Total Revenue	NA	124	181	236	319	389	443	485	525	570	NA	12%
Increase over Prior Year		NA	45%	31%	35%	22%	14%	9%	8%	9%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 57  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Scandinavia  
 PLATFORM: Technical Workstation

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	177	403	902	1,910	3,900	5,430	7,250	8,950	10,620	NA	41%
Workstation Shipments	NA	177	403	902	1,910	3,900	5,430	7,250	8,950	10,620	NA	41%
CPU Installed Base	NA	177	584	1,486	3,368	7,180	12,380	19,070	27,460	37,530	NA	62%
Workstation Installed Base	NA	177	584	1,486	3,368	7,180	12,380	19,070	27,460	37,530	NA	62%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	96.6	92.3	51.0	48.2	44.1	41.1	38.4	37.0	37.1	NA	-5%
Hardware-Only ASP	NA	43.3	37.4	25.4	21.1	19.1	17.3	15.6	14.3	13.6	NA	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	20	27	61	108	134	158	176	196	NA	26%
CPU Revenue	NA	NA	16	22	52	90	112	132	148	165	NA	26%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	4	5	10	18	22	26	28	31	NA	27%
Software Revenue	NA	NA	11	27	31	61	84	109	131	154	NA	37%
Bundled	NA	NA	10	11	9	24	30	37	39	42	NA	35%
Unbundled	NA	NA	1	16	22	37	55	72	92	112	NA	38%
Service Revenue	NA	2	3	15	23	40	52	63	72	81	NA	29%
Total Revenue	NA	15	34	69	118	209	270	330	379	431	NA	30%
Increase over Prior Year		NA	117%	107%	70%	77%	29%	22%	15%	14%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 58  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Scandinavia  
 PLATFORM: Host-Dependent/Server

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	129	184	388	439	390	380	330	320	320	NA	-6%
Workstation Shipments	NA	616	1,240	1,061	1,755	1,370	1,230	1,000	920	860	NA	-13%
CPU Installed Base	NA	129	319	754	1,139	1,520	1,860	2,090	2,310	2,530	NA	17%
Workstation Installed Base	NA	616	1,506	2,753	4,666	5,980	7,010	7,520	7,950	8,310	NA	12%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	616.6	600.5	233.2	315.2	297.9	279.7	263.2	250.2	235.7	NA	-6%
Hardware-Only ASP	NA	862.3	495.4	237.2	190.4	167.1	156.2	146.9	141.8	134.2	NA	-7%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	90	81	101	77	69	55	50	46	NA	-15%
CPU Revenue	NA	NA	43	39	52	41	36	29	26	24	NA	-14%
Workstation Revenue	NA	NA	34	31	20	19	17	15	14	13	NA	-8%
Peripheral Revenue	NA	NA	13	12	29	17	15	12	11	9	NA	-21%
Software Revenue	NA	NA	17	25	28	28	26	23	22	21	NA	-6%
Bundled	NA	NA	14	12	16	16	15	12	11	10	NA	-8%
Unbundled	NA	NA	2	14	12	11	11	10	10	11	NA	-3%
Service Revenue	NA	9	12	25	25	19	17	14	13	12	NA	-14%
Total Revenue	NA	98	119	130	152	124	112	92	85	79	NA	-12%
Increase over Prior Year		NA	22%	9%	17%	-18%	-10%	-18%	-8%	-7%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 59  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Scandinavia  
 PLATFORM: Personal Computer

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	1,190	3,870	4,616	7,065	7,860	8,970	9,520	9,850	9,900	NA	7%
Workstation Shipments	NA	1,190	3,798	4,616	7,065	7,860	8,970	9,520	9,850	9,900	NA	7%
CPU Installed Base	NA	1,190	3,596	7,922	16,242	23,000	29,690	35,430	41,490	47,610	NA	24%
Workstation Installed Base	NA	1,190	3,596	7,922	16,242	23,000	29,690	35,430	41,490	47,610	NA	24%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	55.3	23.6	15.2	9.2	14.5	15.9	14.3	12.2	10.5	NA	3%
Hardware-Only ASP	NA	5.6	3.8	3.9	4.1	4.1	4.1	3.9	3.6	3.4	NA	-4%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	25	24	37	35	39	39	37	35	NA	-1%
CPU Revenue	NA	NA	24	23	36	34	38	37	35	33	NA	-2%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	1	1	1	1	1	2	2	2	NA	14%
Software Revenue	NA	NA	7	13	16	19	21	22	23	24	NA	8%
Bundled	NA	NA	3	3	2	2	2	1	1	1	NA	-17%
Unbundled	NA	NA	4	10	14	16	19	21	22	23	NA	10%
Service Revenue	NA	0	1	2	1	2	2	2	2	2	NA	7%
Total Revenue	NA	11	28	36	49	56	62	63	62	60	NA	4%
Increase over Prior Year		NA	148%	32%	34%	15%	11%	2%	-2%	-3%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 60  
 TITLE: History and Forecast  
 APPLICATION: Mechanical  
 REGION: Scandinavia  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	----	----	----	----	----	----	----	----	----	----	-----	-----
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	835	2,197	3,027	5,186	6,620	7,880	8,850	9,620	10,220	NA	15%
Workstation Shipments	NA	1,221	3,048	3,560	6,205	7,360	8,550	9,380	10,120	10,690	NA	11%
CPU Installed Base	NA	835	2,336	4,754	10,985	16,990	23,560	30,110	37,420	45,340	NA	33%
Workstation Installed Base	NA	1,221	3,286	6,341	13,788	20,500	27,610	34,370	41,860	49,920	NA	29%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	371.7	175.9	81.1	78.3	55.3	49.3	41.7	38.4	36.4	NA	-14%
Hardware-Only ASP	NA	24.2	14.1	13.7	10.6	10.4	10.1	9.6	9.6	9.9	NA	-1%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	86	83	124	124	133	132	136	140	NA	2%
CPU Revenue	NA	NA	47	49	85	91	101	102	106	109	NA	5%
Workstation Revenue	NA	NA	26	23	12	10	10	9	9	10	NA	-4%
Peripheral Revenue	NA	NA	12	12	28	22	22	21	21	21	NA	-5%
Software Revenue	NA	NA	18	38	39	52	66	77	91	105	NA	22%
Bundled	NA	NA	15	16	15	18	19	19	20	22	NA	7%
Unbundled	NA	NA	3	22	24	34	47	57	70	83	NA	28%
Service Revenue	NA	7	10	28	31	34	39	42	47	52	NA	11%
Total Revenue	NA	78	111	146	190	210	238	251	274	296	NA	9%
Increase over Prior Year		NA	43%	31%	30%	10%	13%	5%	9%	8%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 61  
 TITLE: History and Forecast  
 APPLICATION: AEC  
 REGION: Scandinavia  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	333	1,112	1,532	1,921	2,780	3,420	4,050	4,590	5,010	NA	21%
Workstation Shipments	NA	386	1,143	1,579	2,050	2,900	3,500	4,110	4,630	5,040	NA	20%
CPU Installed Base	NA	333	1,098	3,179	4,747	7,220	9,990	12,940	16,440	20,360	NA	34%
Workstation Installed Base	NA	386	1,218	3,374	5,044	7,630	10,470	13,460	16,960	20,880	NA	33%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	342.2	108.8	57.1	85.1	78.6	69.7	63.2	58.6	56.3	NA	-8%
Hardware-Only ASP	NA	18.6	7.6	5.9	6.8	6.6	6.0	5.4	4.8	4.5	NA	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	18	18	34	40	42	43	43	44	NA	6%
CPU Revenue	NA	NA	13	14	25	31	34	36	36	37	NA	8%
Workstation Revenue	NA	NA	3	2	3	4	3	2	2	1	NA	-19%
Peripheral Revenue	NA	NA	2	2	5	5	5	5	5	5	NA	3%
Software Revenue	NA	NA	5	9	10	14	16	18	20	22	NA	16%
Bundled	NA	NA	3	4	4	6	5	5	5	5	NA	5%
Unbundled	NA	NA	2	5	7	9	11	13	15	17	NA	21%
Service Revenue	NA	1	2	6	8	11	11	12	12	13	NA	9%
Total Revenue	NA	14	23	32	51	65	69	73	75	79	NA	9%
Increase over Prior Year		NA	67%	38%	58%	27%	7%	5%	2%	5%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 62  
 TITLE: History and Forecast  
 APPLICATION: Mapping  
 REGION: Scandinavia  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	12	132	209	279	420	540	660	780	890	NA	26%
Workstation Shipments	NA	37	173	259	370	490	610	720	830	930	NA	20%
CPU Installed Base	NA	12	75	233	624	1,020	1,500	2,040	2,700	3,460	NA	41%
Workstation Installed Base	NA	37	143	352	833	1,300	1,840	2,420	3,110	3,890	NA	36%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	512.5	188.0	101.0	198.9	132.0	116.4	102.7	90.9	83.0	NA	-16%
Hardware-Only ASP	NA	430.8	21.9	37.2	18.1	15.8	13.6	11.0	9.4	8.6	NA	-14%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	9	12	16	18	20	22	24	26	NA	10%
CPU Revenue	NA	NA	5	7	10	13	15	16	18	20	NA	14%
Workstation Revenue	NA	NA	3	4	3	2	2	2	2	1	NA	-14%
Peripheral Revenue	NA	NA	1	2	3	3	3	3	4	4	NA	8%
Software Revenue	NA	NA	2	4	8	10	12	14	15	17	NA	18%
Bundled	NA	NA	2	3	4	4	5	5	5	5	NA	7%
Unbundled	NA	NA	0	1	4	5	7	9	10	12	NA	25%
Service Revenue	NA	1	2	3	3	4	5	6	7	8	NA	19%
Total Revenue	NA	7	13	20	27	32	37	41	46	52	NA	13%
Increase over Prior Year		NA	83%	49%	40%	16%	17%	11%	11%	12%		

Source: Dataquest  
 April 1989

Forecasts



TABLE NUMBER: 63  
 TITLE: History and Forecast  
 APPLICATION: Electronic Design Automation  
 REGION: Scandinavia  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	316	1,015	1,138	2,028	2,340	2,940	3,540	4,140	4,720	NA	18%
Workstation Shipments	NA	338	1,076	1,182	2,105	2,380	2,970	3,560	4,150	4,730	NA	18%
CPU Installed Base	NA	316	989	1,994	4,393	6,480	8,870	11,490	14,710	18,510	NA	33%
Workstation Installed Base	NA	338	1,039	2,093	4,610	6,740	9,150	11,770	14,970	18,760	NA	32%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	124.2	78.5	30.5	22.3	40.0	39.2	36.3	35.2	35.2	NA	10%
Hardware-Only ASP	NA	56.0	13.2	14.9	10.2	12.8	12.0	12.8	12.5	12.6	NA	4%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	22	18	25	40	47	56	60	66	NA	22%
CPU Revenue	NA	NA	17	14	19	30	36	44	49	55	NA	23%
Workstation Revenue	NA	NA	1	2	1	2	2	2	1	1	NA	-11%
Peripheral Revenue	NA	NA	3	3	5	7	9	11	11	11	NA	20%
Software Revenue	NA	NA	10	14	19	31	37	45	50	55	NA	24%
Bundled	NA	NA	7	4	5	14	17	21	21	22	NA	35%
Unbundled	NA	NA	3	11	14	17	20	24	29	33	NA	19%
Service Revenue	NA	1	2	5	7	13	15	19	20	22	NA	27%
Total Revenue	NA	25	33	38	50	83	99	120	131	144	NA	23%
Increase over Prior Year		NA	31%	15%	33%	65%	19%	21%	9%	10%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 64  
 TITLE: History and Forecast  
 APPLICATION: Electronic CAE  
 REGION: Scandinavia  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	237	584	700	1,474	1,670	2,160	2,630	3,020	3,390	NA	18%
Workstation Shipments	NA	245	598	716	1,505	1,690	2,170	2,630	3,030	3,390	NA	18%
CPU Installed Base	NA	237	619	1,255	2,926	4,440	6,250	8,280	10,700	13,490	NA	36%
Workstation Installed Base	NA	245	635	1,288	3,001	4,530	6,350	8,370	10,790	13,570	NA	35%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	79.8	54.7	27.1	12.4	31.4	31.7	30.2	28.6	28.0	NA	18%
Hardware-Only ASP	NA	43.7	13.9	14.4	8.6	13.2	11.8	12.6	12.4	12.7	NA	8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	11	10	12	25	30	37	40	44	NA	29%
CPU Revenue	NA	NA	9	8	10	19	24	29	32	36	NA	29%
Workstation Revenue	NA	NA	0	1	0	1	1	1	0	0	NA	0%
Peripheral Revenue	NA	NA	2	2	2	5	6	7	7	7	NA	30%
Software Revenue	NA	NA	4	6	9	17	21	26	27	28	NA	25%
Bundled	NA	NA	3	2	3	10	13	16	15	15	NA	42%
Unbundled	NA	NA	1	4	6	7	9	10	11	13	NA	14%
Service Revenue	NA	1	1	3	3	8	9	12	12	13	NA	32%
Total Revenue	NA	13	15	19	25	50	61	75	79	84	NA	28%
Increase over Prior Year		NA	13%	24%	33%	103%	22%	23%	5%	7%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 65  
 TITLE: History and Forecast  
 APPLICATION: IC Layout  
 REGION: Scandinavia  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	====	====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	18	29	81	62	90	110	140	160	190	NA	25%
Workstation Shipments	NA	21	31	84	67	90	120	140	160	190	NA	23%
CPU Installed Base	NA	18	48	123	187	270	360	460	580	730	NA	31%
Workstation Installed Base	NA	21	50	128	201	280	380	480	600	750	NA	30%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	89.7	110.6	19.4	75.5	69.4	65.0	58.0	53.6	51.3	NA	-7%
Hardware-Only ASP	NA	288.6	63.5	24.6	32.5	24.2	20.9	17.9	15.1	13.7	NA	-16%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	2	2	2	2	2	3	3	3	NA	5%
CPU Revenue	NA	NA	1	1	2	2	2	2	2	2	NA	8%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	-18%
Peripheral Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	2%
Software Revenue	NA	NA	1	2	3	4	5	6	7	9	NA	26%
Bundled	NA	NA	0	0	0	0	1	1	1	1	NA	20%
Unbundled	NA	NA	1	2	3	3	4	5	7	8	NA	26%
Service Revenue	NA	0	0	0	1	1	1	1	1	2	NA	20%
Total Revenue	NA	3	3	4	6	7	8	10	11	13	NA	18%
Increase over Prior Year		NA	3%	25%	35%	20%	18%	20%	18%	15%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 66  
 TITLE: History and Forecast  
 APPLICATION: PCB Layout  
 REGION: Scandinavia  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	61	402	357	492	570	660	770	950	1,150	NA	18%
Workstation Shipments	NA	72	447	382	534	600	680	790	960	1,150	NA	17%
CPU Installed Base	NA	61	322	617	1,280	1,770	2,260	2,750	3,420	4,280	NA	27%
Workstation Installed Base	NA	72	354	677	1,409	1,920	2,430	2,910	3,580	4,430	NA	26%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	301.7	114.2	38.6	69.4	80.6	77.9	74.4	69.7	67.7	NA	-0%
Hardware-Only ASP	NA	75.8	9.2	13.8	10.6	10.1	10.7	12.3	12.2	12.1	NA	3%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	9	6	10	13	14	16	18	20	NA	14%
CPU Revenue	NA	NA	7	4	8	9	11	12	14	17	NA	17%
Workstation Revenue	NA	NA	1	1	1	1	1	1	0	0	NA	-17%
Peripheral Revenue	NA	NA	1	1	2	2	3	3	3	3	NA	9%
Software Revenue	NA	NA	5	7	7	10	11	14	16	18	NA	22%
Bundled	NA	NA	4	1	2	3	4	5	5	6	NA	24%
Unbundled	NA	NA	1	5	5	6	7	9	11	13	NA	21%
Service Revenue	NA	1	1	3	3	4	5	6	7	8	NA	22%
Total Revenue	NA	9	15	15	20	26	30	35	41	47	NA	18%
Increase over Prior Year		NA	68%	4%	33%	31%	15%	17%	16%	14%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 67  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: United Kingdom  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	2,801	9,232	12,221	11,341	14,270	17,350	19,860	22,290	24,420	NA	17%
Workstation Shipments	NA	3,742	11,416	13,815	13,238	15,990	18,870	21,030	23,330	25,320	NA	14%
CPU Installed Base	NA	2,801	9,120	20,172	34,675	46,710	59,440	71,910	86,820	103,860	NA	25%
Workstation Installed Base	NA	3,742	11,430	23,958	41,397	55,080	68,980	81,810	96,930	114,050	NA	22%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	158.2	94.1	48.6	80.9	73.7	66.6	58.6	53.8	51.1	NA	-9%
Hardware-Only ASP	NA	25.4	11.5	13.9	17.3	11.1	10.6	10.1	9.7	9.6	NA	-11%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	296	276	371	358	387	396	407	421	NA	3%
CPU Revenue	NA	NA	190	184	271	266	294	306	318	331	NA	4%
Workstation Revenue	NA	NA	65	54	40	36	32	26	23	21	NA	-12%
Peripheral Revenue	NA	NA	40	38	60	56	61	64	66	69	NA	3%
Software Revenue	NA	NA	104	160	204	247	297	339	387	434	NA	16%
Bundled	NA	NA	77	66	97	103	109	110	112	113	NA	3%
Unbundled	NA	NA	27	94	106	143	188	228	275	321	NA	25%
Service Revenue	NA	27	44	94	113	119	135	146	159	173	NA	9%
Total Revenue	NA	254	436	528	683	724	820	881	952	1,028	NA	9%
Increase over Prior Year		NA	72%	21%	30%	6%	13%	7%	8%	8%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 68  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: United Kingdom  
 PLATFORM: Technical Workstation

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	800	2,067	3,915	5,391	5,420	7,430	9,610	11,860	14,040	NA	21%
Workstation Shipments	NA	800	2,067	3,915	5,391	5,420	7,430	9,610	11,860	14,040	NA	21%
CPU Installed Base	NA	800	3,083	7,013	12,060	17,100	23,490	31,010	40,780	52,730	NA	34%
Workstation Installed Base	NA	800	3,083	7,013	12,060	17,100	23,490	31,010	40,780	52,730	NA	34%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	75.8	73.0	37.4	59.5	55.5	51.9	48.9	45.9	44.8	NA	-6%
Hardware-Only ASP	NA	35.3	27.9	24.3	20.1	18.2	16.5	14.9	13.6	12.9	NA	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	91	96	184	178	217	251	275	301	NA	10%
CPU Revenue	NA	NA	76	80	153	146	178	205	225	248	NA	10%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	15	17	31	32	39	46	49	54	NA	12%
Software Revenue	NA	NA	47	82	108	139	191	241	291	341	NA	26%
Bundled	NA	NA	40	36	50	55	67	77	82	87	NA	12%
Unbundled	NA	NA	7	46	58	84	124	164	209	254	NA	34%
Service Revenue	NA	8	12	41	67	73	94	113	128	145	NA	17%
Total Revenue	NA	65	151	220	359	390	502	604	694	787	NA	17%
Increase over Prior Year		NA	131%	45%	64%	9%	29%	20%	15%	13%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 69  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: United Kingdom  
 PLATFORM: Host-Dependent/Server

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	240	314	734	684	580	560	490	470	460	NA	-8%
Workstation Shipments	NA	1,180	2,615	2,328	2,580	2,300	2,080	1,660	1,510	1,360	NA	-12%
CPU Installed Base	NA	240	558	1,349	1,969	2,530	3,020	3,330	3,620	3,890	NA	15%
Workstation Installed Base	NA	1,180	2,868	5,135	8,691	10,890	12,570	13,230	13,730	14,080	NA	10%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	531.8	654.6	223.3	437.8	405.3	373.3	347.4	320.1	295.9	NA	-8%
Hardware-Only ASP	NA	862.8	506.6	246.7	148.2	129.3	120.9	113.7	112.5	108.5	NA	-6%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	164	144	153	130	115	90	80	72	NA	-14%
CPU Revenue	NA	NA	75	71	85	71	62	49	43	38	NA	-15%
Workstation Revenue	NA	NA	65	54	40	36	32	26	23	21	NA	-12%
Peripheral Revenue	NA	NA	23	20	28	23	20	16	14	12	NA	-15%
Software Revenue	NA	NA	41	51	64	67	62	52	49	46	NA	-6%
Bundled	NA	NA	31	25	44	44	39	31	28	24	NA	-11%
Unbundled	NA	NA	10	26	21	23	23	20	21	22	NA	1%
Service Revenue	NA	18	29	49	44	41	36	29	26	23	NA	-12%
Total Revenue	NA	166	235	244	256	238	213	171	155	141	NA	-11%
Increase over Prior Year		NA	41%	4%	5%	-7%	-10%	-20%	-9%	-9%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 70  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: United Kingdom  
 PLATFORM: Personal Computer

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	1,761	6,850	7,573	5,266	8,270	9,360	9,760	9,970	9,920	NA	14%
Workstation Shipments	NA	1,761	6,735	7,573	5,266	8,270	9,360	9,760	9,970	9,920	NA	14%
CPU Installed Base	NA	1,761	5,479	11,810	20,646	27,090	32,930	37,570	42,420	47,230	NA	18%
Workstation Installed Base	NA	1,761	5,479	11,810	20,646	27,090	32,930	37,570	42,420	47,230	NA	18%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	44.7	13.7	9.3	13.7	12.9	11.9	11.0	10.3	9.4	NA	-7%
Hardware-Only ASP	NA	5.6	3.7	3.8	5.8	5.9	5.8	5.5	5.1	4.8	NA	-4%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	41	36	33	51	55	55	51	48	NA	8%
CPU Revenue	NA	NA	39	34	32	49	54	52	49	46	NA	7%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	2	2	1	2	2	2	2	3	NA	15%
Software Revenue	NA	NA	15	27	32	41	45	46	47	47	NA	8%
Bundled	NA	NA	6	5	4	4	3	2	2	2	NA	-15%
Unbundled	NA	NA	10	22	28	36	42	44	45	45	NA	10%
Service Revenue	NA	1	2	5	3	4	5	5	5	4	NA	7%
Total Revenue	NA	22	50	64	68	96	105	105	103	99	NA	8%
Increase over Prior Year		NA	125%	28%	6%	41%	9%	1%	-3%	-3%		

Source: Dataquest  
 April 1989

Forecasts



TABLE NUMBER: 71  
 TITLE: History and Forecast  
 APPLICATION: Mechanical  
 REGION: United Kingdom  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	1,522	4,872	6,764	6,683	8,250	9,820	10,970	11,900	12,590	NA	14%
Workstation Shipments	NA	2,195	6,694	8,077	8,156	9,550	10,980	11,860	12,730	13,350	NA	10%
CPU Installed Base	NA	1,522	4,631	9,494	19,359	26,380	33,660	40,560	48,380	56,900	NA	24%
Workstation Installed Base	NA	2,195	6,355	12,381	24,671	32,940	41,130	48,280	56,300	64,930	NA	21%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	176.6	101.9	50.2	75.9	69.5	61.8	52.2	47.9	45.4	NA	-10%
Hardware-Only ASP	NA	21.0	12.1	14.9	18.2	11.2	10.9	10.3	10.1	10.2	NA	-11%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	178	171	223	213	225	219	222	224	NA	0%
CPU Revenue	NA	NA	105	108	160	159	171	169	171	172	NA	1%
Workstation Revenue	NA	NA	50	40	28	22	20	16	16	16	NA	-11%
Peripheral Revenue	NA	NA	23	23	35	32	34	33	35	36	NA	1%
Software Revenue	NA	NA	49	84	111	134	163	181	209	236	NA	16%
Bundled	NA	NA	38	39	61	63	64	60	60	60	NA	-0%
Unbundled	NA	NA	11	45	50	71	99	122	149	176	NA	29%
Service Revenue	NA	15	26	55	69	72	82	86	94	101	NA	8%
Total Revenue	NA	144	248	308	398	419	470	486	525	561	NA	7%
Increase over Prior Year		NA	72%	24%	29%	6%	12%	3%	8%	7%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 72  
 TITLE: History and Forecast  
 APPLICATION: AEC  
 REGION: United Kingdom  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	559	1,717	2,350	1,905	2,750	3,380	3,970	4,470	4,870	NA	21%
Workstation Shipments	NA	710	1,843	2,476	2,109	2,950	3,530	4,080	4,540	4,920	NA	18%
CPU Installed Base	NA	559	1,839	5,146	6,308	8,600	11,060	13,600	16,650	20,090	NA	26%
Workstation Installed Base	NA	710	2,159	5,628	6,966	9,450	12,020	14,590	17,610	21,020	NA	25%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	161.9	103.3	69.6	103.5	82.4	72.1	65.1	60.1	57.6	NA	-11%
Hardware-Only ASP	NA	16.6	7.7	6.5	11.9	7.8	7.3	6.6	6.0	5.6	NA	-14%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	36	35	55	54	56	58	57	58	NA	1%
CPU Revenue	NA	NA	24	25	41	41	45	47	47	48	NA	3%
Workstation Revenue	NA	NA	8	6	7	7	5	4	3	2	NA	-21%
Peripheral Revenue	NA	NA	4	4	7	6	7	7	7	7	NA	0%
Software Revenue	NA	NA	10	22	26	31	36	41	45	50	NA	14%
Bundled	NA	NA	6	10	12	12	12	12	12	13	NA	2%
Unbundled	NA	NA	3	11	14	19	24	29	33	38	NA	22%
Service Revenue	NA	4	6	15	19	19	20	21	22	23	NA	4%
Total Revenue	NA	33	49	71	100	104	113	120	124	132	NA	6%
Increase over Prior Year		NA	50%	45%	39%	4%	9%	6%	3%	6%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 73  
 TITLE: History and Forecast  
 APPLICATION: Mapping  
 REGION: United Kingdom  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	15	216	475	441	600	780	960	1,150	1,350	NA	25%
Workstation Shipments	NA	72	303	534	582	740	920	1,080	1,250	1,440	NA	20%
CPU Installed Base	NA	15	183	592	1,137	1,710	2,400	3,160	4,110	5,260	NA	36%
Workstation Installed Base	NA	72	326	791	1,484	2,190	3,000	3,850	4,860	6,060	NA	32%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	448.5	122.1	57.5	93.1	79.6	71.9	65.0	58.7	54.3	NA	-10%
Hardware-Only ASP	NA	344.3	27.4	40.7	33.4	16.8	14.5	11.9	10.2	9.3	NA	-23%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	15	20	25	25	28	31	35	39	NA	9%
CPU Revenue	NA	NA	9	14	19	18	22	25	28	33	NA	12%
Workstation Revenue	NA	NA	4	4	4	4	4	3	3	2	NA	-8%
Peripheral Revenue	NA	NA	2	3	3	3	3	3	3	4	NA	5%
Software Revenue	NA	NA	4	7	10	13	16	19	22	24	NA	19%
Bundled	NA	NA	3	5	6	6	7	8	9	10	NA	11%
Unbundled	NA	NA	1	2	5	7	9	11	13	15	NA	26%
Service Revenue	NA	1	3	6	5	5	6	7	8	9	NA	11%
Total Revenue	NA	8	21	32	41	43	51	57	64	73	NA	12%
Increase over Prior Year		NA	158%	51%	27%	4%	19%	12%	12%	13%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 74  
 TITLE: History and Forecast  
 APPLICATION: Electronic Design Automation  
 REGION: United Kingdom  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	705	2,427	2,632	2,312	2,670	3,370	3,960	4,780	5,610	NA	19%
Workstation Shipments	NA	763	2,576	2,729	2,390	2,750	3,430	4,000	4,800	5,620	NA	19%
CPU Installed Base	NA	705	2,466	4,940	7,871	10,030	12,320	14,590	17,690	21,610	NA	22%
Workstation Installed Base	NA	763	2,590	5,158	8,276	10,500	12,840	15,100	18,160	22,030	NA	22%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	116.4	75.0	31.8	81.2	81.8	79.0	74.5	68.7	65.8	NA	-4%
Hardware-Only ASP	NA	46.8	12.9	17.9	18.4	13.6	12.9	13.1	12.4	12.3	NA	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	67	50	68	67	77	88	93	100	NA	8%
CPU Revenue	NA	NA	53	37	51	48	57	65	71	77	NA	9%
Workstation Revenue	NA	NA	3	4	2	4	3	3	2	1	NA	-11%
Peripheral Revenue	NA	NA	11	8	15	15	17	20	21	22	NA	7%
Software Revenue	NA	NA	42	48	57	69	82	97	111	124	NA	17%
Bundled	NA	NA	30	12	19	23	26	30	31	31	NA	10%
Unbundled	NA	NA	12	36	38	46	56	67	80	93	NA	20%
Service Revenue	NA	7	9	18	20	22	27	32	35	39	NA	14%
Total Revenue	NA	69	118	115	145	158	186	217	239	263	NA	13%
Increase over Prior Year		NA	71%	-2%	26%	9%	18%	17%	10%	10%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 75  
 TITLE: History and Forecast  
 APPLICATION: Electronic CAE  
 REGION: United Kingdom  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	474	1,358	1,459	1,191	1,350	1,790	2,120	2,570	3,010	NA	20%
Workstation Shipments	NA	483	1,383	1,496	1,200	1,360	1,800	2,130	2,580	3,010	NA	20%
CPU Installed Base	NA	474	1,405	2,794	4,350	5,390	6,550	7,730	9,370	11,440	NA	21%
Workstation Installed Base	NA	483	1,427	2,847	4,442	5,480	6,650	7,830	9,450	11,510	NA	21%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	81.2	52.0	30.4	83.8	86.1	85.6	80.9	76.1	74.3	NA	-2%
Hardware-Only ASP	NA	37.1	13.3	17.7	18.1	12.9	12.0	12.5	12.2	12.3	NA	-7%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	29	26	33	31	39	47	49	52	NA	10%
CPU Revenue	NA	NA	23	20	24	22	28	34	36	40	NA	10%
Workstation Revenue	NA	NA	1	1	1	1	1	1	0	0	NA	-4%
Peripheral Revenue	NA	NA	6	5	8	8	10	12	12	12	NA	8%
Software Revenue	NA	NA	14	17	22	27	33	39	41	44	NA	14%
Bundled	NA	NA	10	6	8	10	13	16	15	15	NA	13%
Unbundled	NA	NA	3	12	14	16	20	22	25	29	NA	15%
Service Revenue	NA	2	3	8	9	10	13	16	16	17	NA	13%
Total Revenue	NA	31	45	51	65	68	84	101	106	113	NA	12%
Increase over Prior Year		NA	43%	13%	27%	6%	23%	21%	5%	7%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 76  
 TITLE: History and forecast  
 APPLICATION: IC Layout  
 REGION: United Kingdom  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	64	106	174	205	290	390	480	550	640	NA	26%
Workstation Shipments	NA	75	123	177	215	300	390	480	550	640	NA	24%
CPU Installed Base	NA	64	172	352	541	810	1,140	1,510	1,960	2,500	NA	36%
Workstation Installed Base	NA	75	189	374	581	850	1,180	1,560	2,000	2,530	NA	34%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	106.1	109.7	36.3	192.2	177.8	165.2	154.5	145.6	142.7	NA	-6%
Hardware-Only ASP	NA	210.9	34.7	28.7	24.3	21.9	19.2	16.6	14.3	13.1	NA	-12%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	5	5	6	8	9	9	9	10	NA	9%
CPU Revenue	NA	NA	4	4	5	5	6	7	7	8	NA	10%
Workstation Revenue	NA	NA	0	0	0	1	1	1	0	0	NA	-12%
Peripheral Revenue	NA	NA	1	1	1	1	2	2	2	2	NA	11%
Software Revenue	NA	NA	6	5	6	9	11	13	17	20	NA	26%
Bundled	NA	NA	2	1	1	1	1	2	2	2	NA	21%
Unbundled	NA	NA	4	4	6	7	9	12	15	18	NA	27%
Service Revenue	NA	1	1	1	2	2	3	3	4	4	NA	19%
Total Revenue	NA	10	12	11	14	19	22	26	30	34	NA	19%
Increase over Prior Year		NA	16%	-9%	36%	30%	19%	18%	16%	14%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 77  
 TITLE: History and Forecast  
 APPLICATION: PCB Layout  
 REGION: United Kingdom  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	167	963	998	916	1,030	1,190	1,360	1,660	1,950	NA	16%
Workstation Shipments	NA	206	1,070	1,056	976	1,090	1,240	1,400	1,680	1,960	NA	15%
CPU Installed Base	NA	167	890	1,795	2,980	3,830	4,630	5,350	6,360	7,670	NA	21%
Workstation Installed Base	NA	206	973	1,937	3,253	4,170	5,000	5,710	6,710	7,990	NA	20%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	188.6	98.7	32.6	76.1	74.7	69.9	64.9	59.4	56.6	NA	-6%
Hardware-Only ASP	NA	64.5	9.3	14.9	16.6	11.0	11.3	12.4	12.0	11.8	NA	-7%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	33	19	29	28	30	32	35	38	NA	6%
CPU Revenue	NA	NA	27	14	22	21	22	25	27	30	NA	6%
Workstation Revenue	NA	NA	2	3	1	2	2	1	1	0	NA	-15%
Peripheral Revenue	NA	NA	5	3	6	5	6	6	7	8	NA	5%
Software Revenue	NA	NA	22	26	28	33	39	45	53	60	NA	17%
Bundled	NA	NA	18	6	10	11	12	12	13	14	NA	7%
Unbundled	NA	NA	4	20	18	22	27	33	39	46	NA	21%
Service Revenue	NA	4	6	9	9	10	11	13	15	17	NA	14%
Total Revenue	NA	27	61	54	66	71	80	90	103	116	NA	12%
Increase over Prior Year		NA	124%	-12%	22%	-7%	13%	13%	14%	12%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 78  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Rest of Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	441	1,058	1,275	1,995	2,610	3,170	3,910	4,510	5,100	NA	21%
Workstation Shipments	NA	551	1,250	1,461	2,275	2,910	3,440	4,130	4,720	5,300	NA	18%
CPU Installed Base	NA	441	1,097	2,063	4,636	6,960	9,530	12,440	15,950	20,060	NA	34%
Workstation Installed Base	NA	551	1,343	2,494	5,416	8,030	10,830	13,880	17,510	21,730	NA	32%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	186.7	102.2	55.9	60.1	66.6	60.2	52.7	49.6	48.0	NA	-4%
Hardware-Only ASP	NA	21.5	10.6	13.5	16.6	21.7	23.7	24.3	25.1	26.5	NA	10%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	31	33	54	79	95	113	129	148	NA	23%
CPU Revenue	NA	NA	18	21	42	64	79	95	110	127	NA	25%
Workstation Revenue	NA	NA	7	6	4	5	5	4	4	4	NA	-3%
Peripheral Revenue	NA	NA	6	7	8	10	11	13	15	17	NA	18%
Software Revenue	NA	NA	9	20	26	36	45	55	67	80	NA	25%
Bundled	NA	NA	7	7	9	13	13	14	15	17	NA	13%
Unbundled	NA	NA	1	14	17	24	32	41	52	63	NA	30%
Service Revenue	NA	4	3	10	13	19	23	27	31	36	NA	23%
Total Revenue	NA	31	42	63	91	135	163	195	227	264	NA	24%
Increase over Prior Year		NA	34%	51%	44%	48%	21%	20%	16%	16%		

Source: Dataquest  
 April 1989

Forecasts



TABLE NUMBER: 79  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Rest of Europe  
 PLATFORM: Technical Workstation

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	77	160	275	495	890	1,220	1,690	2,130	2,600	NA	39%
Workstation Shipments	NA	77	160	275	495	890	1,220	1,690	2,130	2,600	NA	39%
CPU Installed Base	NA	77	180	401	997	1,850	2,990	4,500	6,460	8,880	NA	55%
Workstation Installed Base	NA	77	180	401	997	1,850	2,990	4,500	6,460	8,880	NA	55%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	88.9	71.3	55.8	53.8	52.2	48.5	44.9	43.2	42.9	NA	-4%
Hardware-Only ASP	NA	38.0	34.7	24.4	90.5	94.6	88.0	76.9	68.1	63.4	NA	-7%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	7	10	27	53	70	89	106	127	NA	36%
CPU Revenue	NA	NA	5	8	24	47	62	79	94	112	NA	36%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	2	3	3	6	8	10	12	14	NA	33%
Software Revenue	NA	NA	3	9	10	20	28	39	49	61	NA	44%
Bundled	NA	NA	3	3	4	6	8	9	11	13	NA	29%
Unbundled	NA	NA	0	5	6	14	21	29	39	49	NA	50%
Service Revenue	NA	1	1	4	7	13	17	22	26	32	NA	35%
Total Revenue	NA	7	11	23	45	85	115	150	182	219	NA	38%
Increase over Prior Year		NA	57%	104%	94%	91%	35%	30%	22%	21%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 80  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Rest of Europe  
 PLATFORM: Host-Dependent/Server

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	====	====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	28	38	71	68	80	80	70	70	70	NA	1%
Workstation Shipments	NA	138	245	256	347	370	340	300	280	270	NA	-5%
CPU Installed Base	NA	28	67	142	205	280	350	400	450	500	NA	20%
Workstation Installed Base	NA	138	313	573	985	1,350	1,650	1,840	2,010	2,170	NA	17%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	591.9	610.6	318.2	452.2	411.7	384.1	359.5	337.9	318.1	NA	-7%
Hardware-Only ASP	NA	863.0	364.0	238.5	220.4	196.1	182.9	172.5	167.2	159.6	NA	-6%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	17	18	19	20	18	15	14	14	NA	-6%
CPU Revenue	NA	NA	8	9	11	11	10	8	8	7	NA	-7%
Workstation Revenue	NA	NA	7	6	4	5	5	4	4	4	NA	-3%
Peripheral Revenue	NA	NA	3	3	4	4	3	3	3	3	NA	-7%
Software Revenue	NA	NA	3	6	8	10	9	8	9	9	NA	1%
Bundled	NA	NA	3	2	5	6	5	5	4	4	NA	-4%
Unbundled	NA	NA	0	4	3	4	4	4	4	5	NA	7%
Service Revenue	NA	3	2	5	5	6	5	5	4	4	NA	-5%
Total Revenue	NA	21	23	30	32	36	32	28	27	26	NA	-4%
Increase over Prior Year		NA	7%	30%	8%	11%	-9%	-12%	-4%	-3%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 81  
 TITLE: History and Forecast  
 APPLICATION: All Applications  
 REGION: Rest of Europe  
 PLATFORM: Personal Computer

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	336	860	929	1,433	1,650	1,880	2,150	2,310	2,430	NA	11%
Workstation Shipments	NA	336	845	929	1,433	1,650	1,880	2,150	2,310	2,430	NA	11%
CPU Installed Base	NA	336	850	1,519	3,434	4,820	6,200	7,540	9,040	10,670	NA	25%
Workstation Installed Base	NA	336	850	1,519	3,434	4,820	6,200	7,540	9,040	10,670	NA	25%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	38.3	30.1	9.7	8.6	10.2	7.3	5.9	5.6	5.0	NA	-10%
Hardware-Only ASP	NA	5.6	3.7	3.8	4.0	4.1	4.0	3.8	3.5	3.3	NA	-4%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	6	5	8	7	8	8	8	8	NA	1%
CPU Revenue	NA	NA	5	4	7	7	7	8	8	8	NA	2%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue	NA	NA	1	1	1	0	0	0	0	0	NA	-2%
Software Revenue	NA	NA	3	6	8	6	7	8	9	10	NA	4%
Bundled	NA	NA	2	1	1	0	0	0	0	0	NA	-23%
Unbundled	NA	NA	1	5	7	6	7	8	9	10	NA	5%
Service Revenue	NA	0	0	1	1	0	0	0	1	1	NA	0%
Total Revenue	NA	3	8	11	15	14	15	17	18	18	NA	4%
Increase over Prior Year		NA	174%	37%	39%	-6%	10%	11%	4%	4%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 82  
 TITLE: History and Forecast  
 APPLICATION: Mechanical  
 REGION: Rest of Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	214	495	709	1,257	1,610	1,930	2,320	2,610	2,900	NA	18%
Workstation Shipments	NA	302	666	858	1,467	1,820	2,120	2,480	2,780	3,060	NA	16%
CPU Installed Base	NA	214	503	903	2,613	4,080	5,700	7,460	9,520	11,870	NA	35%
Workstation Installed Base	NA	302	703	1,246	3,232	4,910	6,690	8,560	10,710	13,150	NA	32%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	443.9	125.1	55.9	66.4	73.1	66.3	57.0	52.8	50.4	NA	-5%
Hardware-Only ASP	NA	17.6	12.4	14.1	20.4	29.0	32.9	34.8	37.4	40.6	NA	15%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	19	20	37	58	71	85	98	114	NA	25%
CPU Revenue	NA	NA	10	12	29	48	61	74	86	99	NA	28%
Workstation Revenue	NA	NA	5	4	3	3	3	2	3	3	NA	-1%
Peripheral Revenue	NA	NA	4	4	5	7	7	9	10	12	NA	18%
Software Revenue	NA	NA	4	10	15	21	26	32	38	46	NA	25%
Bundled	NA	NA	3	4	7	9	9	10	10	11	NA	11%
Unbundled	NA	NA	1	6	8	12	17	22	28	35	NA	34%
Service Revenue	NA	2	2	6	8	12	15	17	20	24	NA	23%
Total Revenue	NA	18	24	36	59	91	112	134	157	183	NA	25%
Increase over Prior Year		NA	37%	49%	65%	53%	24%	19%	17%	17%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 83  
 TITLE: History and Forecast  
 APPLICATION: AEC  
 REGION: Rest of Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	90	195	261	362	540	660	840	980	1,110	NA	25%
Workstation Shipments	NA	102	203	275	393	570	690	860	990	1,120	NA	23%
CPU Installed Base	NA	90	235	565	876	1,350	1,900	2,530	3,310	4,220	NA	37%
Workstation Installed Base	NA	102	261	613	946	1,460	2,020	2,670	3,460	4,380	NA	36%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	293.0	243.4	59.9	60.1	62.9	57.1	53.2	50.2	49.0	NA	-4%
Hardware-Only ASP	NA	14.3	7.2	7.4	6.5	6.9	6.1	5.4	4.8	4.5	NA	-7%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	3	4	6	9	9	10	11	12	NA	12%
CPU Revenue	NA	NA	2	3	5	7	8	9	9	10	NA	14%
Workstation Revenue	NA	NA	1	1	1	1	1	1	0	0	NA	-14%
Peripheral Revenue	NA	NA	0	0	1	1	1	1	1	2	NA	17%
Software Revenue	NA	NA	1	3	3	5	6	7	8	9	NA	23%
Bundled	NA	NA	0	1	1	1	1	1	1	1	NA	10%
Unbundled	NA	NA	0	2	2	3	4	6	7	8	NA	26%
Service Revenue	NA	0	0	1	2	3	3	3	3	4	NA	18%
Total Revenue	NA	3	4	8	11	16	18	20	22	25	NA	17%
Increase over Prior Year		NA	30%	100%	40%	43%	10%	15%	8%	12%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 84  
 TITLE: History and Forecast  
 APPLICATION: Mapping  
 REGION: Rest of Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	2	17	59	106	150	190	250	310	380	NA	29%
Workstation Shipments	NA	7	27	71	131	180	220	280	340	400	NA	25%
CPU Installed Base	NA	2	14	42	183	330	500	720	1,000	1,340	NA	49%
Workstation Installed Base	NA	7	28	67	234	410	620	860	1,150	1,510	NA	45%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	510.2	461.5	70.8	68.0	82.3	75.3	68.6	62.6	58.5	NA	-3%
Hardware-Only ASP	NA	1,000.0	25.1	44.7	12.7	13.5	11.9	10.0	8.8	8.3	NA	-8%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	2	3	4	5	6	7	9	10	NA	23%
CPU Revenue	NA	NA	1	2	2	4	4	5	6	8	NA	26%
Workstation Revenue	NA	NA	1	1	1	1	1	1	1	1	NA	-1%
Peripheral Revenue	NA	NA	0	0	1	1	1	1	2	2	NA	25%
Software Revenue	NA	NA	0	1	2	3	4	5	5	6	NA	29%
Bundled	NA	NA	0	1	1	1	1	1	2	2	NA	26%
Unbundled	NA	NA	0	0	1	2	2	3	4	4	NA	31%
Service Revenue	NA	0	0	1	1	1	2	2	2	3	NA	26%
Total Revenue	NA	1	3	5	6	10	12	14	16	20	NA	25%
Increase over Prior Year		NA	121%	74%	30%	49%	21%	22%	17%	19%		

Source: Dataquest  
 April 1989

TABLE NUMBER: 85  
 TITLE: History and Forecast  
 APPLICATION: Electronic Design Automation  
 REGION: Rest of Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	====	====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	135	352	245	270	320	390	510	610	710	NA	21%
Workstation Shipments	NA	140	355	258	284	340	410	510	610	720	NA	20%
CPU Installed Base	NA	135	345	553	964	1,200	1,440	1,730	2,120	2,620	NA	22%
Workstation Installed Base	NA	140	351	568	1,003	1,250	1,500	1,790	2,190	2,690	NA	22%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	79.6	59.4	47.3	38.7	44.5	39.3	34.9	33.9	34.2	NA	-2%
Hardware-Only ASP	NA	41.9	9.6	16.1	14.2	12.5	12.0	12.8	12.4	12.4	NA	-3%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	7	6	6	8	8	10	11	12	NA	15%
CPU Revenue	NA	NA	5	3	5	6	6	8	9	10	NA	17%
Workstation Revenue	NA	NA	0	0	0	1	0	0	0	0	NA	-11%
Peripheral Revenue	NA	NA	2	2	1	2	2	2	2	2	NA	14%
Software Revenue	NA	NA	4	7	6	8	10	12	15	18	NA	24%
Bundled	NA	NA	3	1	1	1	2	2	2	2	NA	19%
Unbundled	NA	NA	0	6	5	7	8	10	13	16	NA	25%
Service Revenue	NA	1	0	2	2	3	3	4	5	6	NA	24%
Total Revenue	NA	9	11	15	14	19	21	27	31	37	NA	20%
Increase over Prior Year		NA	17%	32%	-0%	29%	15%	25%	18%	17%		

Source: Dataquest  
 April 1989

Forecasts

TABLE NUMBER: 86  
 TITLE: History and Forecast  
 APPLICATION: Electronic CAE  
 REGION: Rest of Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	91	236	129	134	160	210	280	320	360	NA	22%
Workstation Shipments	NA	92	237	136	139	160	210	280	320	360	NA	21%
CPU Installed Base	NA	91	217	332	563	670	770	920	1,110	1,350	NA	19%
Workstation Installed Base	NA	92	220	339	580	690	800	950	1,140	1,370	NA	19%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	67.0	51.0	60.7	28.2	27.0	22.2	20.0	18.6	18.1	NA	-8%
Hardware-Only ASP	NA	33.3	9.3	14.5	16.1	13.2	11.8	12.4	12.1	12.3	NA	-5%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	4	3	3	3	3	4	4	5	NA	12%
CPU Revenue	NA	NA	3	1	2	2	2	3	3	4	NA	13%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	-3%
Peripheral Revenue	NA	NA	1	2	1	1	1	1	1	1	NA	10%
Software Revenue	NA	NA	2	4	3	3	4	4	5	6	NA	18%
Bundled	NA	NA	2	1	0	0	0	1	1	1	NA	10%
Unbundled	NA	NA	0	3	2	3	3	4	4	5	NA	19%
Service Revenue	NA	0	0	1	1	1	1	2	2	3	NA	19%
Total Revenue	NA	5	7	8	6	7	8	10	12	13	NA	16%
Increase over Prior Year		NA	35%	25%	-23%	14%	14%	26%	12%	13%		

Source: Dataquest  
 April 1989



TABLE NUMBER: 87  
 TITLE: History and Forecast  
 APPLICATION: IC Layout  
 REGION: Rest of Europe  
 PLATFORM: All Platforms

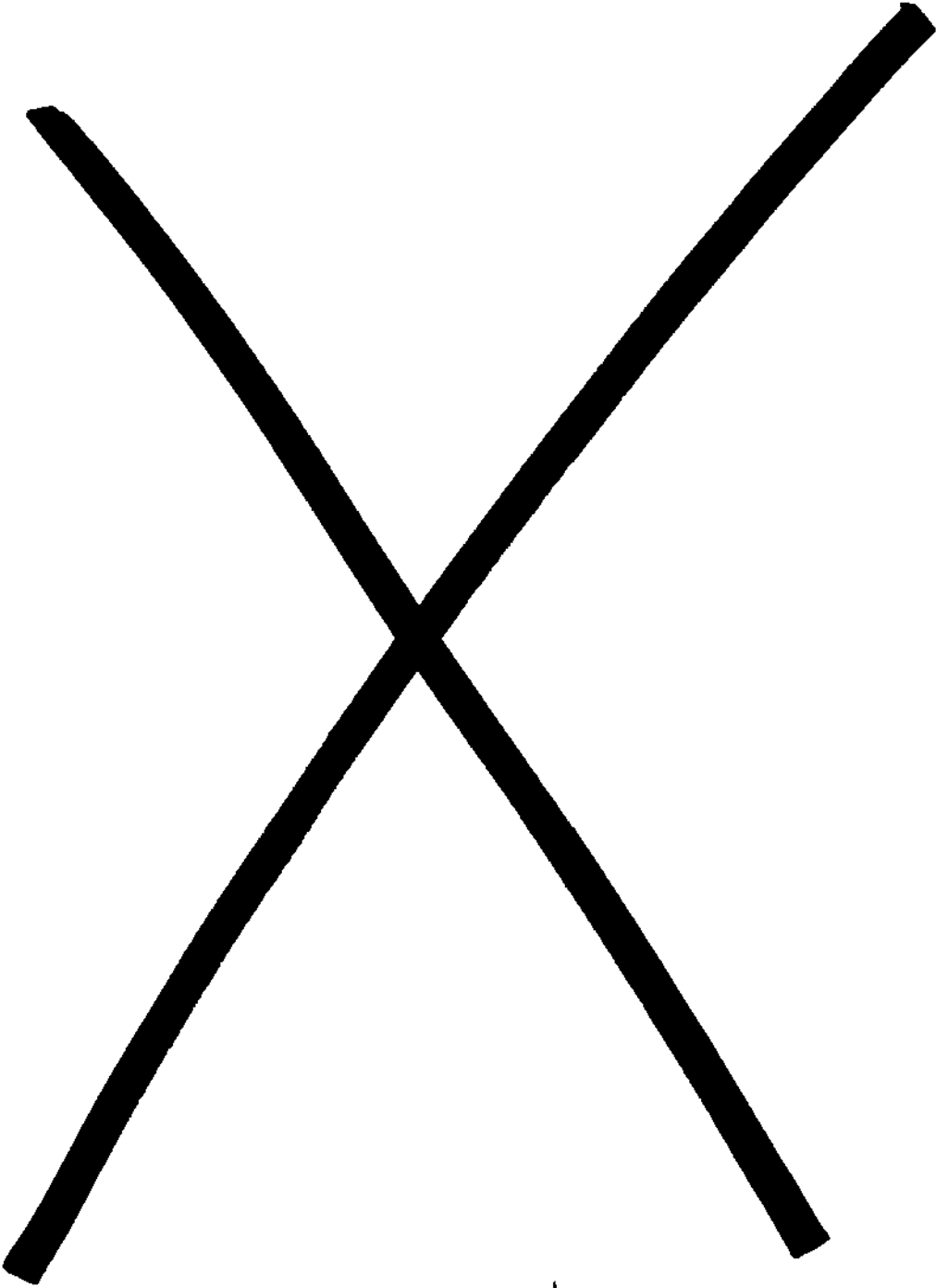
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	13	13	11	7	10	10	20	20	30	NA	34%
Workstation Shipments	NA	15	10	11	8	10	20	20	20	30	NA	29%
CPU Installed Base	NA	13	29	39	42	50	60	70	80	100	NA	19%
Workstation Installed Base	NA	15	27	38	42	50	60	70	80	100	NA	19%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	85.8	101.3	33.8	109.9	86.5	78.0	71.8	65.2	62.0	NA	-11%
Hardware-Only ASP	NA	242.2	32.0	26.5	41.3	25.1	21.4	18.0	15.0	13.2	NA	-20%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	1	0	0	0	0	1	1	1	NA	8%
CPU Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	10%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	-28%
Peripheral Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	13%
Software Revenue	NA	NA	0	1	1	2	2	3	4	5	NA	32%
Bundled	NA	NA	0	0	0	0	0	0	0	0	NA	28%
Unbundled	NA	NA	NA	1	1	2	2	3	4	5	NA	32%
Service Revenue	NA	0	0	0	0	0	0	1	1	1	NA	26%
Total Revenue	NA	2	1	1	2	3	3	4	5	7	NA	27%
Increase over Prior Year		NA	-43%	28%	77%	33%	20%	33%	29%	22%		

Source: Dataquest  
 April 1989

TABLE NUMBER: 88  
 TITLE: History and Forecast  
 APPLICATION: PCB Layout  
 REGION: Rest of Europe  
 PLATFORM: All Platforms

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	CAGR 84-88	CAGR 88-93
	====	====	====	====	====	====	====	====	====	====	=====	=====
UNIT SHIPMENT DATA (Workstation Shipments)												
CPU Shipments	NA	31	103	106	129	150	170	210	270	330	NA	21%
Workstation Shipments	NA	33	108	111	137	160	180	220	270	330	NA	19%
CPU Installed Base	NA	31	99	182	360	480	610	740	930	1,170	NA	27%
Workstation Installed Base	NA	33	104	192	381	520	640	780	970	1,220	NA	26%
AVERAGE SYSTEM PRICE DATA (Thousands of Dollars)												
Turnkey ASP	NA	102.6	77.0	37.2	49.1	66.5	63.0	59.6	55.4	53.5	NA	2%
Hardware-Only ASP	NA	56.3	7.9	17.0	10.5	10.6	11.1	12.7	12.5	12.4	NA	3%
REVENUE DATA (Millions of Dollars)												
Hardware Revenue	NA	NA	2	2	3	4	5	6	6	7	NA	18%
CPU Revenue	NA	NA	2	2	2	3	4	4	5	6	NA	20%
Workstation Revenue	NA	NA	0	0	0	0	0	0	0	0	NA	-12%
Peripheral Revenue	NA	NA	1	0	1	1	1	1	1	1	NA	16%
Software Revenue	NA	NA	1	2	2	3	4	5	6	7	NA	26%
Bundled	NA	NA	1	1	1	1	1	1	1	2	NA	25%
Unbundled	NA	NA	0	2	2	2	3	3	4	5	NA	26%
Service Revenue	NA	0	0	1	1	1	2	2	2	3	NA	29%
Total Revenue	NA	3	4	5	6	9	10	12	14	17	NA	22%
Increase over Prior Year		NA	18%	46%	19%	42%	13%	22%	18%	17%		

Source: Dataquest  
 April 1989



# Market Share

TABLE NUMBER: 1  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	604.0	412.5	111.0	17,015	17.8%	20.7%	12.5%	16.6%
Prime Computer	421.1	188.0	115.5	3,974	12.4%	9.4%	13.0%	3.9%
Digital	234.0	190.8	.0	2,950	6.9%	9.6%	.0%	2.9%
Intergraph	232.5	139.1	45.1	2,545	6.9%	7.0%	5.1%	2.5%
Hewlett-Packard	127.3	83.5	25.6	6,296	3.8%	4.2%	2.9%	6.2%
Siemens	105.6	63.4	31.7	2,238	3.1%	3.2%	3.6%	2.2%
Control Data	93.4	64.8	12.0	1,092	2.8%	3.2%	1.3%	1.1%
Apollo	83.0	72.7	.0	3,635	2.5%	3.6%	.0%	3.6%
Mentor Graphics	78.3	34.3	34.6	986	2.3%	1.7%	3.9%	1.0%
Daisy Systems	77.3	35.9	26.2	761	2.3%	1.8%	3.0%	.7%
McDonnell Douglas	75.6	50.5	9.3	1,545	2.2%	2.5%	1.0%	1.5%
Schlumberger (Applicon)	67.2	34.9	12.8	936	2.0%	1.8%	1.4%	.9%
Compaq	61.5	61.5	.0	11,798	1.8%	3.1%	.0%	11.5%
Racal-Redac	53.9	5.0	44.2	105	1.6%	.3%	5.0%	.1%
Matra Datavision	50.3	29.6	13.2	428	1.5%	1.5%	1.5%	.4%
Norsk Data	43.5	21.9	12.5	484	1.3%	1.1%	1.4%	.5%
Valid	41.4	21.2	12.8	356	1.2%	1.1%	1.4%	.3%
Autodesk	35.6	.0	35.6	0	1.1%	.0%	4.0%	.0%
Sun	33.9	30.5	.0	1,614	1.0%	1.5%	.0%	1.6%
PAFEC	31.4	.0	31.4	0	.9%	.0%	3.5%	.0%
Ferranti	31.1	20.1	5.8	266	.9%	1.0%	.7%	.3%
Dassault	28.0	.0	23.0	0	.8%	.0%	2.6%	.0%
Apple Computer	23.7	20.9	.0	5,527	.7%	1.0%	.0%	5.4%
ICL	20.9	15.6	3.9	380	.6%	.8%	.4%	.4%
ISICAD	20.7	10.7	6.6	213	.6%	.5%	.7%	.2%
Cisgraph	20.0	10.1	8.2	400	.6%	.5%	.9%	.4%
Sysscan	17.9	11.7	6.1	102	.5%	.6%	.7%	.1%
Silicon Graphics	17.3	15.7	.0	421	.5%	.8%	.0%	.4%
STI-Strassle	17.1	13.7	3.4	27	.5%	.7%	.4%	.0%
Olivetti	16.8	6.9	6.5	2,933	.5%	.3%	.7%	2.9%
Rotring euroCAD	16.0	7.0	7.4	200	.5%	.4%	.8%	.2%
Cimlinc	14.7	7.1	5.7	750	.4%	.4%	.6%	.7%
Ziegler Instruments GmbH	14.1	.0	13.3	0	.4%	.0%	1.5%	.0%

(Continued)

# Market Share

TABLE NUMBER: 1  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Cimatron	13.3	7.8	4.2	340	.4%	.4%	.5%	.3%
ItalCad	13.0	5.8	4.5	220	.4%	.3%	.5%	.2%
SDRC	12.6	.0	12.6	0	.4%	.0%	1.4%	.0%
Exapt	12.1	8.3	2.6	189	.4%	.4%	.3%	.2%
Westward	11.6	7.6	1.7	1,100	.3%	.4%	.2%	1.1%
CAD Centre	10.9	2.0	3.8	0	.3%	.1%	.4%	.0%
Scientific Calc.	10.8	3.2	4.5	35	.3%	.2%	.5%	.0%
Engineering Computer Services	10.5	4.5	3.5	215	.3%	.2%	.4%	.2%
CADAM	10.3	.0	9.1	0	.3%	.0%	1.0%	.0%
CAD Lab	10.0	.0	8.0	0	.3%	.0%	.9%	.0%
Unisys	10.0	4.1	4.5	196	.3%	.2%	.5%	.2%
Secmai	9.7	5.9	1.9	80	.3%	.3%	.2%	.1%
Auto-Trol	9.7	4.1	2.4	270	.3%	.2%	.3%	.3%
Cadence	9.3	.0	7.9	0	.3%	.0%	.9%	.0%
Calay	9.0	2.6	5.1	108	.3%	.1%	.6%	.1%
Silvar-Lisco	9.0	.0	6.1	0	.3%	.0%	.7%	.0%
Logotec	8.5	5.2	2.5	50	.3%	.3%	.3%	.0%
MacNeal-Schwendler	8.4	.0	7.9	0	.2%	.0%	.9%	.0%
Silicon Compiler Systems	8.2	.0	7.4	0	.2%	.0%	.8%	.0%
T2 Solutions	8.1	4.8	2.1	118	.2%	.2%	.2%	.1%
Cade	8.0	1.6	4.2	23	.2%	.1%	.5%	.0%
ISYKON Software	7.5	3.0	3.2	125	.2%	.2%	.4%	.1%
VLSI Technology	7.1	.9	5.1	91	.2%	.0%	.6%	.1%
Intercad	6.5	3.4	1.8	336	.2%	.2%	.2%	.3%
PDA Engineering	6.4	.0	6.4	0	.2%	.0%	.7%	.0%
Assigraph	6.2	.0	2.5	35	.2%	.0%	.3%	.0%
Aucotec	6.0	2.4	2.7	550	.2%	.1%	.3%	.5%
LSI Logic	5.5	1.0	4.0	19	.2%	.0%	.4%	.0%
RHV Software Systems	5.5	.0	5.5	0	.2%	.0%	.6%	.0%
Albert Nestler	5.4	2.6	1.9	138	.2%	.1%	.2%	.1%
Gerber Systems	5.4	3.3	2.1	86	.2%	.2%	.2%	.1%

(Continued)

# Market Share

TABLE NUMBER: 1 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company	Total				Market Share			
	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Zycad	5.3	2.7	2.1	0	.2%	.1%	.2%	.0%
Radan Computational	5.1	2.7	1.4	0	.2%	.1%	.2%	.0%
ESRI	4.9	.4	3.7	7	.1%	.0%	.4%	.0%
Teradyne	4.5	.0	3.6	0	.1%	.0%	.4%	.0%
Technische Computer Systeme	4.3	3.3	1.0	80	.1%	.2%	.1%	.1%
Genrad	4.2	.5	3.4	3	.1%	.0%	.4%	.0%
European Silicon Structures	4.1	.0	4.1	0	.1%	.0%	.5%	.0%
Xilinx	3.2	.0	2.9	0	.1%	.0%	.3%	.0%
Autokon CIM Systems	3.0	.2	2.8	4	.1%	.0%	.3%	.0%
Robocom	2.9	.0	2.9	0	.1%	.0%	.3%	.0%
Superdraft	2.9	.2	2.6	0	.1%	.0%	.3%	.0%
Cadtronic	2.8	1.8	.8	36	.1%	.1%	.1%	.0%
Swanson Analysis	2.7	.0	2.7	0	.1%	.0%	.3%	.0%
Manufacturing Consultants	2.7	.0	2.3	0	.1%	.0%	.3%	.0%
Thom 6	2.6	.0	2.2	0	.1%	.0%	.2%	.0%
Philips International	2.5	.0	2.1	0	.1%	.0%	.2%	.0%
Landmark Graphics	2.4	1.8	.0	19	.1%	.1%	.0%	.0%
Futurenet	1.5	.0	1.3	0	.0%	.0%	.1%	.0%
XAO Industrie	1.5	.6	.8	80	.0%	.0%	.1%	.1%
Sycotronic AG	1.4	.0	1.2	0	.0%	.0%	.1%	.0%
Synercom	1.2	.0	1.0	0	.0%	.0%	.1%	.0%
DECAD	1.2	.3	.7	0	.0%	.0%	.1%	.0%
Vision 3D	1.2	1.2	.0	15	.0%	.1%	.0%	.0%
Catalpa	1.1	.4	.5	22	.0%	.0%	.1%	.0%
ICAD	1.1	1.0	.0	9	.0%	.0%	.0%	.0%
CAD-UL	1.0	.3	.7	27	.0%	.0%	.1%	.0%
Plessey Semiconductors	.8	.0	.6	0	.0%	.0%	.1%	.0%
Other Companies	432.2	285.9	130.4	31,252	12.8%	14.3%	14.7%	30.6%
All Companies	3,386.9	1,995.2	886.2	102,281	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	2,720.7	1,711.6	590.5	90,824	80.3%	85.8%	66.6%	88.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	666.2	283.7	295.6	11,457	19.7%	14.2%	33.4%	11.2%
All Hardware Companies	735.4	692.4	.0	67,322	21.7%	34.7%	.0%	65.8%
All Turnkey & SW Companies	2,651.5	1,302.8	886.2	34,959	78.3%	65.3%	100.0%	34.2%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 2  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Prime Computer	268.0	129.1	60.6	2,985	17.4%	15.8%	13.8%	11.7%
Intergraph	151.1	91.7	27.7	1,122	9.8%	11.2%	6.3%	4.4%
Hewlett-Packard	107.3	63.5	25.6	2,486	7.0%	7.8%	5.8%	9.8%
Siemens	97.3	58.4	29.2	2,169	6.3%	7.2%	6.7%	8.5%
Digital	81.9	64.6	.0	2,950	5.3%	7.9%	.0%	11.6%
Mentor Graphics	78.3	34.3	34.6	986	5.1%	4.2%	7.9%	3.9%
Apollo	74.7	65.5	.0	3,311	4.9%	8.0%	.0%	13.0%
Daisy Systems	70.6	33.0	23.0	679	4.6%	4.0%	5.2%	2.7%
Schlumberger (Applicon)	45.7	23.8	8.7	619	3.0%	2.9%	2.0%	2.4%
Valid	39.7	20.3	12.3	332	2.6%	2.5%	2.8%	1.3%
Racal-Redac	35.1	5.0	25.3	105	2.3%	.6%	5.8%	.4%
Sun	28.8	26.0	.0	1,451	1.9%	3.2%	.0%	5.7%
IBM	26.7	19.4	3.3	570	1.7%	2.4%	.8%	2.2%
PAFEC	26.6	.0	26.6	0	1.7%	.0%	6.1%	.0%
Control Data	24.5	16.6	4.0	525	1.6%	2.0%	.9%	2.1%
McDonnell Douglas	24.4	15.8	3.6	534	1.6%	1.9%	.8%	2.1%
ICL	20.9	15.6	3.9	380	1.4%	1.9%	.9%	1.5%
ISICAD	18.7	10.7	4.6	213	1.2%	1.3%	1.0%	.8%
Norsk Data	17.4	8.9	5.0	205	1.1%	1.1%	1.1%	.8%
Silicon Graphics	17.3	15.7	.0	421	1.1%	1.9%	.0%	1.7%
Cimlinc	14.0	6.5	5.7	703	.9%	.8%	1.3%	2.8%
STI-Strassle	13.2	10.5	2.6	17	.9%	1.3%	.6%	.1%
ItalCad	13.0	5.8	4.5	220	.8%	.7%	1.0%	.9%
Cimatron	12.0	7.0	3.9	306	.8%	.9%	.9%	1.2%
CAD Centre	10.9	2.0	3.8	0	.7%	.2%	.9%	.0%
Auto-Trol	9.7	4.1	2.4	254	.6%	.5%	.6%	1.0%
Secmai	9.5	5.7	1.9	77	.6%	.7%	.4%	.3%
Calay	9.0	2.6	5.1	108	.6%	.3%	1.2%	.4%
CAD Lab	9.0	.0	7.2	0	.6%	.0%	1.6%	.0%
SDRC	8.6	.0	8.6	0	.6%	.0%	2.0%	.0%
Silicon Compiler Systems	8.2	.0	7.4	0	.5%	.0%	1.7%	.0%
Rotring euroCAD	8.0	3.5	3.7	60	.5%	.4%	.8%	.2%
Cade	8.0	1.6	4.2	23	.5%	.2%	1.0%	.1%

(Continued)

# Market Share

TABLE NUMBER: 2  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Unisys	7.5	3.1	3.4	134	.5%	.4%	.8%	.5%
Cadence	7.4	.0	6.3	0	.5%	.0%	1.4%	.0%
Silver-Lisco	7.4	.0	5.0	0	.5%	.0%	1.1%	.0%
Scientific Calc.	7.0	2.7	2.3	32	.5%	.3%	.5%	.1%
Cisigraph	6.0	3.1	2.5	67	.4%	.4%	.6%	.3%
VLSI Technology	6.0	.9	4.2	91	.4%	.1%	1.0%	.4%
Dassault	5.6	.0	4.6	0	.4%	.0%	1.0%	.0%
Gerber Systems	5.4	3.3	2.1	86	.3%	.4%	.5%	.3%
Engineering Computer Services	5.3	2.3	1.7	57	.3%	.3%	.4%	.2%
T2 Solutions	5.1	2.9	1.5	61	.3%	.4%	.3%	.2%
Radan Computational	5.1	2.7	1.4	0	.3%	.3%	.3%	.0%
ISYKON Software	5.0	2.0	2.1	125	.3%	.2%	.5%	.5%
Albert Nestler	4.9	2.3	1.8	106	.3%	.3%	.4%	.4%
Technische Computer Systeme	4.3	3.3	1.0	80	.3%	.4%	.2%	.3%
LSI Logic	4.0	1.0	2.6	19	.3%	.1%	.6%	.1%
Exapt	3.7	2.1	1.2	61	.2%	.3%	.3%	.2%
Assigraph	3.3	.0	1.2	20	.2%	.0%	.3%	.1%
European Silicon Structures	3.2	.0	3.2	0	.2%	.0%	.7%	.0%
Autokon CIM Systems	3.0	.2	2.8	4	.2%	.0%	.6%	.0%
Genrad	2.8	.3	2.3	2	.2%	.0%	.5%	.0%
PDA Engineering	2.6	.0	2.6	0	.2%	.0%	.6%	.0%
Thom 6	1.8	.0	1.5	0	.1%	.0%	.3%	.0%
Autodesk	1.8	.0	1.8	0	.1%	.0%	.4%	.0%
Landmark Graphics	1.7	1.3	.0	13	.1%	.2%	.0%	.1%
XAD Industrie	1.5	.6	.8	80	.1%	.1%	.2%	.3%
CADAM	1.4	.0	1.2	0	.1%	.0%	.3%	.0%
Teradyne	1.3	.0	1.1	0	.1%	.0%	.2%	.0%
DECAD	1.1	.2	.7	0	.1%	.0%	.2%	.0%
Catalpa	1.1	.4	.5	22	.1%	.1%	.1%	.1%
ICAD	1.1	1.0	.0	9	.1%	.1%	.0%	.0%
Manufacturing Consultants	1.0	.0	.8	0	.1%	.0%	.2%	.0%

(Continued)



# Market Share

TABLE NUMBER: 2 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
MacNeal-Schwendler	.8	.0	.8	0	.1%	.0%	.2%	.0%
ESRI	.8	.1	.6	3	.1%	.0%	.1%	.0%
Ferranti	.8	.4	.2	11	.1%	.1%	.0%	.0%
Plessey Semiconductors	.6	.0	.5	0	.0%	.0%	.1%	.0%
Swanson Analysis	.5	.0	.5	0	.0%	.0%	.1%	.0%
Aucotec	.3	.2	.1	28	.0%	.0%	.0%	.1%
Futurenet	.2	.0	.1	0	.0%	.0%	.0%	.0%
Zycad	.1	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	130.5	49.9	57.8	1,540	8.5%	6.1%	13.2%	6.1%
All Companies	1,538.0	816.4	438.2	25,404	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	1,184.5	665.0	282.3	20,977	77.0%	81.4%	64.4%	82.6%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	353.5	151.5	155.9	4,427	23.0%	18.6%	35.6%	17.4%
All Hardware Companies	214.4	182.1	.0	8,618	13.9%	22.3%	.0%	33.9%
All Turnkey & SW Companies	1,323.6	634.4	438.2	16,786	86.1%	77.7%	100.0%	66.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 3  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****
IBM	506.5	324.9	105.6	5,406	36.3%	36.5%	35.8%	35.1%
Digital	152.1	126.2	.0	0	10.9%	14.2%	.0%	.0%
Prime Computer	136.5	56.4	42.3	846	9.8%	6.3%	14.4%	5.5%
Intergraph	77.3	47.4	13.6	1,423	5.5%	5.3%	4.6%	9.2%
Control Data	68.9	48.2	8.0	567	4.9%	5.4%	2.7%	3.7%
McDonnell Douglas	51.2	34.7	5.7	1,011	3.7%	3.9%	1.9%	6.6%
Matra Datavision	50.3	29.6	13.2	428	3.6%	3.3%	4.5%	2.8%
Ferranti	30.3	19.7	5.6	255	2.2%	2.2%	1.9%	1.7%
Norsk Data	25.2	12.9	7.3	243	1.8%	1.5%	2.5%	1.6%
Dassault	22.4	.0	18.4	0	1.6%	.0%	6.2%	.0%
Schlumberger (Applicon)	21.5	11.2	4.1	317	1.5%	1.3%	1.4%	2.1%
Sysscan	17.9	11.7	6.1	102	1.3%	1.3%	2.1%	.7%
Cisigraph	14.0	7.0	5.7	333	1.0%	.8%	1.9%	2.2%
Westward	9.3	5.9	1.4	267	.7%	.7%	.5%	1.7%
Exapt	8.5	6.2	1.4	128	.6%	.7%	.5%	.8%
Siemens	8.3	5.0	2.5	69	.6%	.6%	.8%	.5%
Apollo	8.3	7.2	.0	324	.6%	.8%	.0%	2.1%
MacNeal-Schwendler	7.4	.0	6.9	0	.5%	.0%	2.3%	.0%
Daisy Systems	5.4	2.7	1.9	82	.4%	.3%	.6%	.5%
Zycad	5.2	2.7	2.1	0	.4%	.3%	.7%	.0%
Sun	5.1	4.6	.0	163	.4%	.5%	.0%	1.1%
PAFEC	4.8	.0	4.8	0	.3%	.0%	1.6%	.0%
SDRC	4.0	.0	4.0	0	.3%	.0%	1.4%	.0%
STI-Stressle	4.0	3.2	.8	10	.3%	.4%	.3%	.1%
PDA Engineering	3.9	.0	3.9	0	.3%	.0%	1.3%	.0%
Scientific Calc.	3.8	.5	2.1	4	.3%	.1%	.7%	.0%
ESRI	3.3	.3	2.3	4	.2%	.0%	.8%	.0%
CADAM	3.0	.0	2.6	0	.2%	.0%	.9%	.0%
T2 Solutions	2.9	1.9	.6	57	.2%	.2%	.2%	.4%
Assigraph	2.9	.0	1.3	16	.2%	.0%	.4%	.1%
ISYKON Software	2.5	1.0	1.0	0	.2%	.1%	.3%	.0%
Unisys	2.5	1.0	1.1	61	.2%	.1%	.4%	.4%

(Continued)

# Market Share

TABLE NUMBER: 3 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company	Market Share				Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Teradyne	2.2	.0	1.8	0	.2%	.0%	.6%	.0%
Cadence	1.9	.0	1.6	0	.1%	.0%	.5%	.0%
Swanson Analysis	1.8	.0	1.8	0	.1%	.0%	.6%	.0%
Silvar-Lisco	1.6	.0	1.1	0	.1%	.0%	.4%	.0%
LSI Logic	1.5	.0	1.4	0	.1%	.0%	.5%	.0%
Genrad	1.4	.2	1.1	1	.1%	.0%	.4%	.0%
Synercom	1.2	.0	1.0	0	.1%	.0%	.3%	.0%
Olivetti	1.2	.6	.5	84	.1%	.1%	.2%	.5%
Manufacturing Consultants	1.2	.0	1.0	0	.1%	.0%	.3%	.0%
VLSI Technology	1.1	.0	.9	0	.1%	.0%	.3%	.0%
Thom 6	.8	.0	.7	0	.1%	.0%	.2%	.0%
Landmark Graphics	.7	.4	.0	5	.1%	.0%	.0%	.0%
Cimline	.7	.7	.0	47	.1%	.1%	.0%	.3%
Aucotec	.3	.2	.1	28	.0%	.0%	.0%	.2%
European Silicon Structures	.3	.0	.3	0	.0%	.0%	.1%	.0%
Plessey Semiconductors	.2	.0	.1	0	.0%	.0%	.0%	.0%
Futurenet	.1	.0	.1	0	.0%	.0%	.0%	.0%
DECAD	.1	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	135.9	130.8	13.1	3,594	9.8%	14.7%	4.4%	23.3%
All Companies	1,394.2	889.6	294.7	15,393	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	1,187.8	784.7	222.8	13,373	85.2%	88.2%	75.6%	86.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	206.4	104.9	71.9	2,020	14.8%	11.8%	24.4%	13.1%
All Hardware Companies	281.8	266.2	.0	3,572	20.2%	29.9%	.0%	23.2%
All Turnkey & SW Companies	1,112.4	623.3	294.7	11,821	79.8%	70.1%	100.0%	76.8%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 4  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	70.9	68.2	2.1	11,040	15.6%	23.6%	1.4%	18.0%
Compaq	61.5	61.5	.0	11,798	13.5%	21.2%	.0%	19.2%
Autodesk	33.9	.0	33.9	0	7.5%	.0%	22.1%	.0%
Apple Computer	23.7	20.9	.0	5,527	5.2%	7.2%	.0%	9.0%
Hewlett-Packard	20.0	20.0	.0	3,810	4.4%	6.9%	.0%	6.2%
Racal-Redac	18.9	.0	18.9	0	4.1%	.0%	12.3%	.0%
Prime Computer	16.6	2.5	12.6	143	3.7%	.9%	8.2%	.2%
Olivetti	15.6	6.4	6.0	2,850	3.4%	2.2%	3.9%	4.6%
Ziegler Instruments GmbH	14.1	.0	13.3	0	3.1%	.0%	8.7%	.0%
Logotec	8.5	5.2	2.5	50	1.9%	1.8%	1.6%	.1%
Rotring euroCAD	8.0	3.5	3.7	140	1.8%	1.2%	2.4%	.2%
Intercad	6.5	3.4	1.8	336	1.4%	1.2%	1.2%	.5%
CADAM	5.9	.0	5.3	0	1.3%	.0%	3.4%	.0%
RHV Software Systems	5.5	.0	5.5	0	1.2%	.0%	3.6%	.0%
Aucotec	5.4	2.0	2.5	495	1.2%	.7%	1.6%	.8%
Engineering Computer Services	5.3	2.3	1.7	158	1.2%	.8%	1.1%	.3%
Intergraph	4.1	.0	3.8	0	.9%	.0%	2.5%	.0%
Xilinx	3.2	.0	2.9	0	.7%	.0%	1.9%	.0%
Robocom	2.9	.0	2.9	0	.6%	.0%	1.9%	.0%
Superdraft	2.9	.2	2.6	0	.6%	.1%	1.7%	.0%
Cadtronic	2.8	1.8	.8	36	.6%	.6%	.5%	.1%
Philips International	2.5	.0	2.1	0	.5%	.0%	1.4%	.0%
Westward	2.3	1.7	.3	833	.5%	.6%	.2%	1.4%
ISICAD	2.1	.0	2.1	0	.5%	.0%	1.4%	.0%
Valid	1.7	.9	.5	24	.4%	.3%	.3%	.0%
Sycotronic AG	1.4	.0	1.2	0	.3%	.0%	.8%	.0%
Cimatron	1.3	.9	.4	34	.3%	.3%	.2%	.1%
Daisy Systems	1.3	.2	1.3	0	.3%	.1%	.8%	.0%
Futurenet	1.3	.0	1.1	0	.3%	.0%	.7%	.0%
Vision 3D	1.2	1.2	.0	15	.3%	.4%	.0%	.0%
CAD-UL	1.0	.3	.7	27	.2%	.1%	.5%	.0%
CAD Lab	1.0	.0	.8	0	.2%	.0%	.5%	.0%

(Continued)

# Market Share

TABLE NUMBER: 4 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Teradyne	.9	.0	.7	0	.2%	.0%	.5%	.0%
Norsk Data	.9	.1	.2	36	.2%	.0%	.1%	.1%
ESRI	.8	.0	.8	0	.2%	.0%	.5%	.0%
European Silicon Structures	.7	.0	.7	0	.1%	.0%	.4%	.0%
Manufacturing Consultants	.5	.0	.5	0	.1%	.0%	.3%	.0%
Albert Nestler	.5	.3	.1	32	.1%	.1%	.1%	.1%
Swanson Analysis	.3	.0	.3	0	.1%	.0%	.2%	.0%
Secmai	.2	.1	.0	3	.0%	.0%	.0%	.0%
MacNeal-Schwendler	.2	.0	.2	0	.0%	.0%	.1%	.0%
Plessey Semiconductors	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	165.7	105.2	59.6	26,117	36.4%	36.4%	38.9%	42.5%
All Companies	454.7	289.2	153.3	61,484	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	348.3	261.9	85.5	56,474	76.6%	90.6%	55.8%	91.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	106.4	27.3	67.8	5,010	23.4%	9.4%	44.2%	8.1%
All Hardware Companies	239.2	244.1	.0	55,132	52.6%	84.4%	.0%	89.7%
All Turnkey & SW Companies	215.4	45.1	153.3	6,352	47.4%	15.6%	100.0%	10.3%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 5  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company	Total				Market Share			
	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
IBM	526.8	354.4	100.0	12,513	24.9%	27.2%	20.1%	19.6%
Prime Computer	331.6	147.5	91.0	3,044	15.7%	11.3%	18.3%	4.8%
Digital	128.7	104.9	.0	1,623	6.1%	8.0%	.0%	2.5%
Control Data	81.3	56.5	10.4	953	3.8%	4.3%	2.1%	1.5%
Hewlett-Packard	78.5	50.3	16.4	3,283	3.7%	3.9%	3.3%	5.1%
Siemens	72.9	43.7	21.9	1,604	3.4%	3.4%	4.4%	2.5%
Intergraph	69.7	41.7	13.5	763	3.3%	3.2%	2.7%	1.2%
Schlumberger (Applicon)	66.2	34.4	12.6	921	3.1%	2.6%	2.5%	1.4%
McDonnell Douglas	52.6	35.0	6.6	1,165	2.5%	2.7%	1.3%	1.8%
Matra Datavision	50.3	29.6	13.2	428	2.4%	2.3%	2.6%	.7%
Compaq	43.4	43.4	.0	8,333	2.1%	3.3%	.0%	13.0%
Norsk Data	36.5	18.5	10.4	484	1.7%	1.4%	2.1%	.8%
Apollo	32.4	28.4	.0	1,418	1.5%	2.2%	.0%	2.2%
Ferranti	31.1	20.1	5.8	266	1.5%	1.5%	1.2%	.4%
PAFEC	25.2	.0	25.2	0	1.2%	.0%	5.1%	.0%
Dassault	23.8	.0	19.5	0	1.1%	.0%	3.9%	.0%
Cisgraph	20.0	10.1	8.2	400	.9%	.8%	1.6%	.6%
Silicon Graphics	17.3	15.7	.0	421	.8%	1.2%	.0%	.7%
Autodesk	16.7	.0	16.7	0	.8%	.0%	3.3%	.0%
ISICAD	16.5	8.5	5.3	169	.8%	.7%	1.1%	.3%
Apple Computer	15.0	13.2	.0	3,500	.7%	1.0%	.0%	5.5%
Sun	14.3	12.9	.0	681	.7%	1.0%	.0%	1.1%
Cimlinc	14.3	6.9	5.5	728	.7%	.5%	1.1%	1.1%
Cimatron	13.3	7.8	4.2	340	.6%	.6%	.8%	.5%
SDRC	12.6	.0	12.6	0	.6%	.0%	2.5%	.0%
Exapt	12.1	8.3	2.6	189	.6%	.6%	.5%	.3%
STI-Strassle	12.0	9.6	2.4	16	.6%	.7%	.5%	.0%
Olivetti	11.2	4.4	4.7	1,911	.5%	.3%	.9%	3.0%
Westward	11.0	7.2	1.6	1,045	.5%	.5%	.3%	1.6%
Engineering Computer Services	10.5	4.5	3.5	215	.5%	.3%	.7%	.3%
Unisys	10.0	4.1	4.5	196	.5%	.3%	.9%	.3%
ICL	9.9	7.4	1.8	180	.5%	.6%	.4%	.3%
Rotring euroCAD	9.6	4.2	4.4	120	.5%	.3%	.9%	.2%

(Continued)

# Market Share

TABLE NUMBER: 5  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
MacNeal-Schwendler	8.4	.0	7.9	0	.4%	.0%	1.6%	.0%
ItalCad	7.8	3.5	2.7	132	.4%	.3%	.5%	.2%
ISYKON Software	7.5	3.0	3.2	125	.4%	.2%	.6%	.2%
CAD Lab	7.0	.0	5.6	0	.3%	.0%	1.1%	.0%
PDA Engineering	6.4	.0	6.4	0	.3%	.0%	1.3%	.0%
Logotec	6.4	3.9	1.9	38	.3%	.3%	.4%	.1%
Auto-Trol	5.8	2.4	1.5	180	.3%	.2%	.3%	.3%
Albert Nestler	5.4	2.6	1.9	138	.3%	.2%	.4%	.2%
Gerber Systems	5.4	3.3	2.1	86	.3%	.3%	.4%	.1%
RHV Software Systems	4.6	.0	4.6	0	.2%	.0%	.9%	.0%
Radan Computational	4.3	2.3	1.2	0	.2%	.2%	.2%	.0%
Ziegler Instruments GmbH	4.2	.0	4.0	0	.2%	.0%	.8%	.0%
CADAM	3.4	.0	2.9	0	.2%	.0%	.6%	.0%
CAD Centre	3.4	.6	1.1	0	.2%	.0%	.2%	.0%
Intercad	3.1	1.6	.9	161	.1%	.1%	.2%	.3%
Autokon CIM Systems	3.0	.2	2.8	4	.1%	.0%	.6%	.0%
Superdraft	2.9	.2	2.6	0	.1%	.0%	.5%	.0%
Swanson Analysis	2.7	.0	2.7	0	.1%	.0%	.5%	.0%
Manufacturing Consultants	2.7	.0	2.3	0	.1%	.0%	.5%	.0%
Philips International	2.5	.0	2.1	0	.1%	.0%	.4%	.0%
Robocom	1.4	.0	1.4	0	.1%	.0%	.3%	.0%
Vision 3D	1.2	1.2	.0	15	.1%	.1%	.0%	.0%
Catalpa	1.1	.4	.5	22	.1%	.0%	.1%	.0%
ICAD	1.1	1.0	.0	9	.1%	.1%	.0%	.0%
Cadtronic	.3	.2	.1	4	.0%	.0%	.0%	.0%
Sysscan	.1	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 5 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Other Companies	243.3	189.2	57.2	18,431	11.5%	14.5%	11.5%	28.8%
All Companies	2,116.0	1,303.9	498.1	63,948	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 1,698.4	 1,106.9	 332.2	 56,077	 80.3%	 84.9%	 66.7%	 87.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	417.6	197.0	165.8	7,871	19.7%	15.1%	33.3%	12.3%
All Hardware Companies	437.5	421.6	.0	40,159	20.7%	32.3%	.0%	62.8%
All Turnkey & SW Companies	1,678.5	882.3	498.1	23,789	79.3%	67.7%	100.0%	37.2%

Source: Dataquest  
 April 1989



# Market Share

TABLE NUMBER: 6  
 TITLE: 1988 Market Share  
 APPLICATION: AEC  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Intergraph	97.6	58.4	19.0	1,069	23.6%	23.0%	20.5%	5.8%
Prime Computer	57.1	25.8	15.7	669	13.8%	10.1%	17.0%	3.6%
IBM	39.8	32.1	4.4	3,281	9.6%	12.6%	4.8%	17.8%
Digital	35.1	28.6	.0	443	8.5%	11.2%	.0%	2.4%
McDonnell Douglas	21.5	14.4	2.6	355	5.2%	5.7%	2.8%	1.9%
Hewlett-Packard	19.0	13.6	3.2	1,390	4.6%	5.3%	3.5%	7.5%
Siemens	14.3	8.6	4.3	270	3.5%	3.4%	4.6%	1.5%
Autodesk	11.3	.0	11.3	0	2.7%	.0%	12.2%	.0%
Apollo	10.0	8.7	.0	436	2.4%	3.4%	.0%	2.4%
T2 Solutions	8.1	4.8	2.1	118	2.0%	1.9%	2.3%	.6%
CAD Centre	7.5	1.3	2.7	0	1.8%	.5%	2.9%	.0%
Compaq	6.3	6.3	.0	1,210	1.5%	2.5%	.0%	6.5%
PAFEC	6.2	.0	6.2	0	1.5%	.0%	6.8%	.0%
Apple Computer	5.7	5.0	.0	1,330	1.4%	2.0%	.0%	7.2%
Norsk Data	5.0	2.5	1.5	0	1.2%	1.0%	1.6%	.0%
ISICAD	4.3	2.2	1.4	44	1.0%	.9%	1.5%	.2%
Auto-Trol	3.9	1.6	1.0	90	.9%	.6%	1.0%	.5%
Olivetti	3.6	1.8	1.1	647	.9%	.7%	1.2%	3.5%
Dassault	3.4	.0	2.8	0	.8%	.0%	3.0%	.0%
ItalCad	3.2	1.5	1.1	55	.8%	.6%	1.2%	.3%
CAD Lab	3.0	.0	2.4	0	.7%	.0%	2.6%	.0%
Control Data	1.9	1.3	.2	21	.4%	.5%	.2%	.1%
Ziegler Instruments GmbH	1.8	.0	1.7	0	.4%	.0%	1.9%	.0%
Cadtronic	1.7	1.1	.5	22	.4%	.4%	.5%	.1%
Robocom	1.2	.0	1.2	0	.3%	.0%	1.3%	.0%
Sun	1.2	1.1	.0	57	.3%	.4%	.0%	.3%
Radan Computational	.8	.4	.2	0	.2%	.2%	.2%	.0%
CADAM	.7	.0	.6	0	.2%	.0%	.6%	.0%
Westward	.6	.4	.1	55	.1%	.1%	.1%	.3%
Cimlinc	.5	.2	.2	22	.1%	.1%	.2%	.1%
RHV Software Systems	.2	.0	.2	0	.0%	.0%	.2%	.0%

(Continued)

# Market Share

TABLE NUMBER: 6 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: AEC  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Other Companies	61.5	40.9	15.9	7,084	14.9%	16.1%	17.2%	38.3%
All Companies	412.9	254.5	92.4	18,474	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 354.0	 233.3	 64.8	 17,328	 85.7%	 91.7%	 70.1%	 93.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	58.9	21.2	27.6	1,145	14.3%	8.3%	29.9%	6.2%
All Hardware Companies	111.5	104.7	.0	14,391	27.0%	41.1%	.0%	77.9%
All Turnkey & SW Companies	301.4	149.8	92.4	4,083	73.0%	58.9%	100.0%	22.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 7  
 TITLE: 1988 Market Share  
 APPLICATION: Mapping  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Intergraph	47.4	28.4	9.2	519	26.4%	25.6%	21.0%	14.4%
Digital	23.4	19.1	.0	295	13.0%	17.2%	.0%	8.2%
IBM	18.1	12.4	3.3	510	10.1%	11.1%	7.6%	14.2%
Sysscan	17.8	11.7	6.1	102	9.9%	10.5%	13.9%	2.8%
Siemens	14.3	8.6	4.3	270	7.9%	7.7%	9.8%	7.5%
ICL	9.9	7.4	1.8	180	5.5%	6.6%	4.2%	5.0%
STI-Strassle	5.1	4.1	1.0	12	2.9%	3.7%	2.3%	.3%
Prime Computer	4.9	2.3	1.2	39	2.7%	2.1%	2.6%	1.1%
ESRI	4.9	.4	3.7	7	2.7%	.4%	8.4%	.2%
Autodesk	2.7	.0	2.7	0	1.5%	.0%	6.2%	.0%
Landmark Graphics	2.4	1.8	.0	19	1.3%	1.6%	.0%	.5%
Norsk Data	2.0	1.0	.6	0	1.1%	.9%	1.3%	.0%
ItalCad	1.9	.9	.7	33	1.1%	.8%	1.6%	.9%
McDonnell Douglas	1.5	1.0	.2	25	.8%	.9%	.4%	.7%
Olivetti	1.4	.5	.4	258	.8%	.4%	1.0%	7.2%
Synercom	1.2	.0	1.0	0	.7%	.0%	2.2%	.0%
Apple Computer	1.0	.9	.0	238	.6%	.8%	.0%	6.6%
Ziegler Instruments GmbH	1.0	.0	.9	0	.5%	.0%	2.1%	.0%
Sun	.9	.8	.0	43	.5%	.7%	.0%	1.2%
Cadtronic	.9	.5	.2	11	.5%	.5%	.5%	.3%
Apollo	.8	.7	.0	36	.5%	.6%	.0%	1.0%
Sycotronic AG	.5	.0	.4	0	.3%	.0%	.9%	.0%
RHV Software Systems	.2	.0	.2	0	.1%	.0%	.3%	.0%
Robocom	.1	.0	.1	0	.1%	.0%	.3%	.0%
Hewlett-Packard	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 7 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Mapping  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Other Companies	18.1	9.2	7.7	1,010	10.0%	8.3%	17.6%	28.1%
All Companies	179.9	111.0	43.9	3,596	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	125.8	76.9	27.4	2,741	69.9%	69.3%	62.4%	76.2%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	54.2	34.1	16.5	855	30.1%	30.7%	37.6%	23.8%
All Hardware Companies	35.1	30.4	.0	1,876	19.5%	27.4%	.0%	52.2%
All Turnkey & SW Companies	144.8	80.6	43.9	1,720	80.5%	72.6%	100.0%	47.8%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 8  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Mentor Graphics	78.3	34.3	34.6	986	11.6%	10.5%	13.8%	6.1%
Daisy Systems	77.3	35.9	26.2	761	11.4%	11.0%	10.4%	4.7%
Racal-Redac	53.9	5.0	44.2	105	8.0%	1.5%	17.5%	.6%
Digital	46.8	38.2	.0	590	6.9%	11.7%	.0%	3.6%
Valid	41.4	21.2	12.8	356	6.1%	6.5%	5.1%	2.2%
Apollo	39.9	34.9	.0	1,745	5.9%	10.7%	.0%	10.7%
Hewlett-Packard	29.7	19.6	5.9	1,624	4.4%	6.0%	2.3%	10.0%
Prime Computer	27.5	12.4	7.6	221	4.1%	3.8%	3.0%	1.4%
IBM	19.3	13.6	3.3	710	2.9%	4.2%	1.3%	4.4%
Intergraph	17.7	10.6	3.4	193	2.6%	3.3%	1.4%	1.2%
Sun	17.5	15.7	.0	832	2.6%	4.8%	.0%	5.1%
Compaq	11.8	11.8	.0	2,256	1.7%	3.6%	.0%	13.9%
Scientific Calc.	10.8	3.2	4.5	35	1.6%	1.0%	1.8%	.2%
Control Data	10.3	7.1	1.3	119	1.5%	2.2%	.5%	.7%
Secmaï	9.7	5.9	1.9	80	1.4%	1.8%	.8%	.5%
Cadence	9.3	.0	7.9	0	1.4%	.0%	3.1%	.0%
Calay	9.0	2.6	5.1	108	1.3%	.8%	2.0%	.7%
Silvar-Lisco	9.0	.0	6.1	0	1.3%	.0%	2.4%	.0%
Silicon Compiler Systems	8.2	.0	7.4	0	1.2%	.0%	2.9%	.0%
Cade	8.0	1.6	4.2	23	1.2%	.5%	1.7%	.1%
VLSI Technology	7.1	.9	5.1	91	1.0%	.3%	2.0%	.6%
Ziegler Instruments GmbH	7.0	.0	6.7	0	1.0%	.0%	2.6%	.0%
Rotring euroCAD	6.4	2.8	3.0	80	.9%	.9%	1.2%	.5%
CADAM	6.3	.0	5.6	0	.9%	.0%	2.2%	.0%
Assigraph	6.2	.0	2.5	35	.9%	.0%	1.0%	.2%
Aucotec	6.0	2.4	2.7	550	.9%	.7%	1.1%	3.4%
LSI Logic	5.5	1.0	4.0	19	.8%	.3%	1.6%	.1%
Zycad	5.3	2.7	2.1	0	.8%	.8%	.8%	.0%
Autodesk	5.0	.0	5.0	0	.7%	.0%	2.0%	.0%
Teradyne	4.5	.0	3.6	0	.7%	.0%	1.4%	.0%
Technische Computer Systeme	4.3	3.3	1.0	80	.6%	1.0%	.4%	.5%
Siemens	4.2	2.5	1.3	94	.6%	.8%	.5%	.6%

(Continued)

# Market Share

TABLE NUMBER: 8 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Genrad	4.2	.5	3.4	3	.6%	.1%	1.3%	.0%
European Silicon Structures	4.1	.0	4.1	0	.6%	.0%	1.6%	.0%
Intercad	3.4	1.7	1.0	175	.5%	.5%	.4%	1.1%
Xilinx	3.2	.0	2.9	0	.5%	.0%	1.2%	.0%
Thom 6	2.6	.0	2.2	0	.4%	.0%	.9%	.0%
Logotec	2.1	1.3	.6	13	.3%	.4%	.2%	.1%
Apple Computer	2.0	1.7	.0	459	.3%	.5%	.0%	2.8%
Futurenet	1.5	.0	1.3	0	.2%	.0%	.5%	.0%
XAO Industrie	1.5	.6	.8	80	.2%	.2%	.3%	.5%
DECAD	1.2	.3	.7	0	.2%	.1%	.3%	.0%
ICL	1.1	.8	.2	20	.2%	.3%	.1%	.1%
CAD-UL	1.0	.3	.7	27	.1%	.1%	.3%	.2%
Schlumberger (Applicon)	1.0	.5	.2	15	.1%	.2%	.1%	.1%
Sycotronic AG	.9	.0	.8	0	.1%	.0%	.3%	.0%
Dassault	.9	.0	.7	0	.1%	.0%	.3%	.0%
Plessey Semiconductors	.8	.0	.6	0	.1%	.0%	.2%	.0%
RHV Software Systems	.6	.0	.6	0	.1%	.0%	.2%	.0%
Olivetti	.6	.3	.2	117	.1%	.1%	.1%	.7%
Robocom	.1	.0	.1	0	.0%	.0%	.1%	.0%
Other Companies	109.2	46.6	49.6	4,727	16.1%	14.3%	19.7%	29.1%
All Companies	678.1	325.8	251.9	16,264	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	542.5	294.5	166.2	14,677	80.0%	90.4%	66.0%	90.2%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	135.6	31.4	85.7	1,587	20.0%	9.6%	34.0%	9.8%
All Hardware Companies	151.3	135.8	.0	10,897	22.3%	41.7%	.0%	67.0%
All Turnkey & SW Companies	526.8	190.1	251.9	5,368	77.7%	58.3%	100.0%	33.0%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 9  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Mentor Graphics	52.5	23.0	23.2	763	15.7%	13.9%	19.2%	8.7%
Daisy Systems	48.3	20.3	17.3	534	14.5%	12.3%	14.4%	6.1%
Valid	34.1	17.4	10.5	330	10.2%	10.6%	8.7%	3.8%
Apollo	24.9	21.8	.0	1,090	7.5%	13.2%	.0%	12.5%
Digital	23.4	19.1	.0	295	7.0%	11.6%	.0%	3.4%
Hewlett-Packard	13.5	9.1	2.6	880	4.0%	5.5%	2.1%	10.1%
Racal-Redac	10.1	1.1	8.1	22	3.0%	.6%	6.8%	.3%
Sun	9.7	8.7	.0	459	2.9%	5.3%	.0%	5.3%
Prime Computer	8.2	3.7	2.3	87	2.4%	2.2%	1.9%	1.0%
Rotring euroCAD	6.4	2.8	3.0	80	1.9%	1.7%	2.5%	.9%
Aucotec	6.0	2.4	2.7	550	1.8%	1.4%	2.3%	6.3%
VLSI Technology	6.0	.8	4.3	77	1.8%	.5%	3.6%	.9%
Control Data	5.6	3.8	.7	66	1.7%	2.3%	.6%	.8%
Zycad	5.3	2.7	2.1	0	1.6%	1.6%	1.7%	.0%
LSI Logic	5.0	.9	3.6	17	1.5%	.5%	3.0%	.2%
Compaq	4.8	4.8	.0	912	1.4%	2.9%	.0%	10.4%
Teradyne	4.5	.0	3.6	0	1.3%	.0%	3.0%	.0%
Technische Computer Systeme	4.3	3.3	1.0	80	1.3%	2.0%	.8%	.9%
Ziegler Instruments GmbH	4.2	.0	4.0	0	1.3%	.0%	3.3%	.0%
Genrad	4.2	.5	3.4	3	1.3%	.3%	2.8%	.0%
Silvar-Lisco	3.6	.0	2.4	0	1.1%	.0%	2.0%	.0%
Autodesk	3.5	.0	3.5	0	1.1%	.0%	2.9%	.0%
Xilinx	3.2	.0	2.9	0	1.0%	.0%	2.4%	.0%
Assigraph	3.2	.0	1.3	18	1.0%	.0%	1.1%	.2%
Thom 6	2.6	.0	2.2	0	.8%	.0%	1.8%	.0%
Silicon Compiler Systems	2.5	.0	2.2	0	.7%	.0%	1.8%	.0%
Logotec	2.1	1.3	.6	13	.6%	.8%	.5%	.1%
Intergraph	1.9	1.1	.4	20	.6%	.7%	.3%	.2%
IBM	1.8	1.8	.0	300	.5%	1.1%	.0%	3.4%
Futurenet	1.5	.0	1.3	0	.5%	.0%	1.1%	.0%
XAO Industrie	1.5	.6	.8	80	.4%	.4%	.7%	.9%
Cadence	1.4	.0	1.2	0	.4%	.0%	1.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 9 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Intercad	1.3	.7	.4	67	.4%	.4%	.3%	.8%
Secmai	1.0	.6	.2	8	.3%	.4%	.2%	.1%
Dassault	.9	.0	.7	0	.3%	.0%	.6%	.0%
RHV Software Systems	.6	.0	.6	0	.2%	.0%	.5%	.0%
Apple Computer	.5	.5	.0	126	.2%	.3%	.0%	1.4%
Robocom	.1	.0	.1	0	.0%	.0%	.1%	.0%
Sycotronic AG	.1	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	54.4	21.6	27.7	2,673	16.3%	13.1%	22.9%	30.6%
All Companies	333.9	164.8	120.6	8,731	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	289.6	152.1	94.8	7,813	86.7%	92.3%	78.6%	89.5%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	44.3	12.7	25.8	918	13.3%	7.7%	21.4%	10.5%
All Hardware Companies	79.9	71.8	.0	5,546	23.9%	43.5%	.0%	63.5%
All Turnkey & SW Companies	254.0	93.0	120.6	3,186	76.1%	56.5%	100.0%	36.5%

Source: Dataquest  
 April 1989



# Market Share

TABLE NUMBER: 10  
 TITLE: 1988 Market Share  
 APPLICATION: IC Layout  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company	Market Share				Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Cadence	7.7	.0	6.6	0	10.7%	.0%	21.5%	.0%
Apollo	7.5	6.5	.0	327	10.4%	22.0%	.0%	33.0%
Digital	7.0	5.7	.0	89	9.8%	19.3%	.0%	8.9%
Mentor Graphics	6.3	2.8	2.8	51	8.7%	9.3%	9.1%	5.2%
Silicon Compiler Systems	5.8	.0	5.2	0	8.0%	.0%	16.9%	.0%
Silvar-Lisco	5.4	.0	3.7	0	7.5%	.0%	12.0%	.0%
Sun	4.6	4.1	.0	215	6.3%	13.7%	.0%	21.7%
European Silicon Structures	4.1	.0	4.1	0	5.7%	.0%	13.4%	.0%
Valid	3.1	1.6	1.0	9	4.3%	5.2%	3.1%	.9%
Cade	2.9	.7	1.3	13	4.0%	2.4%	4.3%	1.4%
Daisy Systems	2.5	1.1	.8	17	3.4%	3.5%	2.6%	1.8%
Siemens	2.1	1.3	.6	47	2.9%	4.3%	2.1%	4.8%
Intergraph	2.1	1.3	.4	23	2.9%	4.3%	1.3%	2.3%
Control Data	1.9	1.3	.2	21	2.6%	4.4%	.8%	2.1%
Hewlett-Packard	1.3	.9	.3	56	1.8%	2.9%	.9%	5.7%
VLSI Technology	1.1	.1	.8	14	1.5%	.5%	2.5%	1.4%
Assigraph	1.1	.0	.3	6	1.5%	.0%	.9%	.6%
Plessey Semiconductors	.8	.0	.6	0	1.1%	.0%	2.0%	.0%
LSI Logic	.5	.1	.4	2	.8%	.3%	1.3%	.2%
Prime Computer	.1	.0	.1	0	.1%	.0%	.3%	.0%
Other Companies	13.0	3.1	7.9	120	18.1%	10.3%	25.8%	12.2%
All Companies	71.7	29.6	30.6	991	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	60.8	27.7	23.7	924	84.8%	93.4%	77.3%	93.3%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	10.9	2.0	6.9	66	15.2%	6.6%	22.7%	6.7%
All Hardware Companies	22.1	19.1	.0	772	30.7%	64.6%	.0%	77.9%
All Turnkey & SW Companies	49.7	10.5	30.6	219	69.3%	35.4%	100.0%	22.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 11  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Racal-Redac	43.9	4.0	36.1	83	16.1%	3.0%	35.8%	1.3%
Daisy Systems	26.5	14.6	8.0	210	9.7%	11.1%	8.0%	3.2%
Mentor Graphics	19.6	8.6	8.7	172	7.2%	6.5%	8.6%	2.6%
Prime Computer	19.3	8.7	5.2	134	7.1%	6.6%	5.2%	2.1%
IBM	17.5	11.8	3.3	410	6.4%	9.0%	3.3%	6.3%
Digital	16.4	13.4	.0	207	6.0%	10.2%	.0%	3.2%
Hewlett-Packard	15.0	9.7	3.1	688	5.5%	7.4%	3.1%	10.5%
Intergraph	13.7	8.2	2.7	150	5.0%	6.3%	2.6%	2.3%
Scientific Calc.	10.8	3.2	4.5	35	4.0%	2.4%	4.4%	.5%
Calay	9.0	2.6	5.1	108	3.3%	2.0%	5.0%	1.7%
Secmai	8.7	5.3	1.7	72	3.2%	4.0%	1.7%	1.1%
Apollo	7.5	6.5	.0	327	2.7%	5.0%	.0%	5.0%
Compaq	7.0	7.0	.0	1,344	2.6%	5.3%	.0%	20.5%
CADAM	6.3	.0	5.6	0	2.3%	.0%	5.5%	.0%
Cade	5.1	.9	2.9	9	1.9%	.7%	2.9%	.1%
Valid	4.2	2.2	1.3	17	1.6%	1.7%	1.3%	.3%
Sun	3.3	3.0	.0	158	1.2%	2.3%	.0%	2.4%
Ziegler Instruments GmbH	2.8	.0	2.7	0	1.0%	.0%	2.6%	.0%
Control Data	2.8	1.9	.4	32	1.0%	1.5%	.4%	.5%
Siemens	2.1	1.3	.6	47	.8%	1.0%	.6%	.7%
InterCAD	2.1	1.1	.6	108	.8%	.8%	.6%	1.6%
Assigraph	1.9	.0	.8	11	.7%	.0%	.8%	.2%
Autodesk	1.5	.0	1.5	0	.5%	.0%	1.5%	.0%
Apple Computer	1.4	1.3	.0	333	.5%	1.0%	.0%	5.1%
DECAD	1.2	.3	.7	0	.4%	.2%	.7%	.0%
ICL	1.1	.8	.2	20	.4%	.6%	.2%	.3%
CAD-UL	1.0	.3	.7	27	.4%	.2%	.7%	.4%
Schlumberger (Applicon)	1.0	.5	.2	15	.4%	.4%	.2%	.2%
Sycotronic AG	.9	.0	.7	0	.3%	.0%	.7%	.0%
Olivetti	.6	.3	.2	117	.2%	.2%	.2%	1.8%
Cadence	.2	.0	.2	0	.1%	.0%	.2%	.0%
Robocom	.1	.0	.1	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 11 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
Other Companies	41.9	22.0	14.0	1,934	15.4%	16.7%	13.9%	29.6%
All Companies	272.5	131.4	100.7	6,542	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	192.1	114.7	47.7	5,940	70.5%	87.3%	47.4%	90.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	80.4	16.7	53.0	602	29.5%	12.7%	52.6%	9.2%
All Hardware Companies	49.4	44.9	.0	4,579	18.1%	34.1%	.0%	70.0%
All Turnkey & SW Companies	223.1	86.6	100.7	1,963	81.9%	65.9%	100.0%	30.0%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 12  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Prime Computer	58.5	26.5	15.6	661	24.1%	19.1%	24.3%	7.0%
IBM	47.6	28.6	12.6	1,315	19.5%	20.5%	19.7%	13.9%
Intergraph	21.9	13.4	4.0	239	9.0%	9.6%	6.2%	2.5%
Digital	17.0	12.9	.0	214	7.0%	9.3%	.0%	2.3%
Mentor Graphics	9.4	3.1	5.2	288	3.9%	2.2%	8.1%	3.0%
Hewlett-Packard	6.5	4.3	1.2	325	2.7%	3.1%	1.9%	3.4%
McDonnell Douglas	6.1	4.1	.8	471	2.5%	2.9%	1.3%	5.0%
Apollo	5.8	5.0	.0	255	2.4%	3.6%	.0%	2.7%
Daisy Systems	4.7	2.6	1.3	199	1.9%	1.8%	2.0%	2.1%
Racal-Redac	3.2	.3	2.7	6	1.3%	.2%	4.1%	.1%
PAFEC	3.2	.0	3.2	0	1.3%	.0%	4.9%	.0%
Siemens	3.0	1.8	.9	64	1.2%	1.3%	1.4%	.7%
Ferranti	2.7	1.5	.7	22	1.1%	1.1%	1.0%	.2%
Sun	2.4	2.2	.0	115	1.0%	1.6%	.0%	1.2%
ISICAD	2.1	1.2	.5	21	.9%	.9%	.8%	.2%
Autodesk	2.0	.0	2.0	0	.8%	.0%	3.2%	.0%
Silvar-Lisco	1.6	.0	1.1	0	.7%	.0%	1.7%	.0%
Control Data	1.1	.8	.1	408	.5%	.5%	.2%	4.3%
Cimatron	1.1	.9	.1	122	.4%	.6%	.2%	1.3%
Matra Datavision	1.0	.8	.1	163	.4%	.5%	.2%	1.7%
Norsk Data	1.0	.7	.1	419	.4%	.5%	.1%	4.4%
Cimline	.9	.5	.3	45	.4%	.3%	.5%	.5%
Sysscan	.9	.7	.2	8	.4%	.5%	.3%	.1%
Dassault	.8	.0	.7	0	.3%	.0%	1.1%	.0%
SDRC	.7	.0	.7	0	.3%	.0%	1.0%	.0%
Celay	.6	.4	.1	8	.3%	.3%	.2%	.1%
Exapt	.6	.4	.1	10	.3%	.3%	.2%	.1%
Westward	.6	.1	.0	202	.2%	.0%	.0%	2.1%
Olivetti	.5	.3	.2	104	.2%	.2%	.3%	1.1%
Scientific Calc.	.5	.1	.3	3	.2%	.1%	.5%	.0%
Unisys	.5	.1	.3	14	.2%	.1%	.5%	.2%
Intercad	.5	.2	.2	25	.2%	.2%	.2%	.3%

(Continued)

# Market Share

TABLE NUMBER: 12 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
European Silicon Structures	.4	.0	.4	0	.2%	.0%	.6%	.0%
Valid	.4	.2	.2	4	.2%	.1%	.3%	.0%
Logotec	.4	.3	.0	2	.1%	.2%	.1%	.0%
MacNeal-Schwendler	.3	.0	.3	0	.1%	.0%	.5%	.0%
CADAM	.3	.0	.3	0	.1%	.0%	.4%	.0%
Robocom	.2	.0	.2	0	.1%	.0%	.4%	.0%
RHV Software Systems	.2	.0	.2	0	.1%	.0%	.3%	.0%
Secmai	.2	.1	.0	2	.1%	.1%	.0%	.0%
Superdraft	.2	.0	.2	0	.1%	.0%	.2%	.0%
XAO Industrie	.2	.0	.1	8	.1%	.0%	.2%	.1%
Catalpa	.1	.0	.0	0	.0%	.0%	.1%	.0%
Sycotronic AG	.1	.0	.1	0	.0%	.0%	.1%	.0%
CAD-UL	.1	.0	.1	2	.0%	.0%	.1%	.0%
T2 Solutions	.1	.0	.0	5	.0%	.0%	.0%	.1%
Synercom	.1	.0	.1	0	.0%	.0%	.1%	.0%
Ziegler Instruments GmbH	.1	.0	.1	0	.0%	.0%	.1%	.0%
Gerber Systems	.1	.0	.0	1	.0%	.0%	.0%	.0%
Thom 6	.1	.0	.0	0	.0%	.0%	.1%	.0%
Plessey Semiconductors	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	20.2	19.2	1.9	2,560	8.3%	13.8%	3.0%	27.0%
All Companies	243.3	139.1	64.0	9,483	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	221.4	130.5	53.3	8,310	91.0%	93.8%	83.3%	87.6%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	21.9	8.6	10.7	1,172	9.0%	6.2%	16.7%	12.4%
All Hardware Companies	53.3	49.9	.0	5,200	21.9%	35.9%	.0%	54.8%
All Turnkey & SW Companies	190.0	89.2	64.0	4,282	78.1%	64.1%	100.0%	45.2%

Source: Dataquest  
April 1989

# Market Share

TABLE NUMBER: 13  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
Prime Computer	39.1	20.6	7.1	465	34.7%	34.7%	24.3%	17.8%
Intergraph	14.2	9.2	2.0	106	12.6%	15.6%	6.8%	4.0%
Mentor Graphics	9.4	3.1	5.2	288	8.4%	5.3%	17.6%	11.0%
Digital	5.9	3.7	.0	214	5.3%	6.3%	.0%	8.2%
Hewlett-Packard	5.5	3.3	1.2	126	4.8%	5.6%	4.1%	4.8%
Apollo	5.2	4.5	.0	232	4.7%	7.6%	.0%	8.9%
Daisy Systems	4.0	2.3	1.0	190	3.5%	3.8%	3.5%	7.3%
Siemens	2.8	1.7	.8	62	2.5%	2.8%	2.9%	2.4%
PAFEC	2.7	.0	2.7	0	2.4%	.0%	9.1%	.0%
IBM	2.1	1.5	.3	45	1.9%	2.5%	1.0%	1.7%
Racal-Redac	2.1	.3	1.5	6	1.9%	.5%	5.2%	.2%
Sun	2.0	1.9	.0	103	1.8%	3.1%	.0%	4.0%
McDonnell Douglas	2.0	1.5	.1	150	1.8%	2.4%	.4%	5.8%
ISICAD	1.9	1.2	.3	21	1.7%	2.1%	1.0%	.8%
Silvar-Lisco	1.3	.0	.9	0	1.2%	.0%	3.1%	.0%
Cimatron	1.0	.8	.1	110	.9%	1.3%	.3%	4.2%
Cimlinc	.8	.4	.3	42	.7%	.7%	1.0%	1.6%
Calay	.6	.4	.1	8	.6%	.7%	.4%	.3%
SDRC	.4	.0	.4	0	.4%	.0%	1.5%	.0%
Norsk Data	.4	.3	.0	178	.3%	.5%	.1%	6.8%
Valid	.4	.2	.2	3	.3%	.3%	.6%	.1%
Unisys	.4	.1	.2	13	.3%	.2%	.7%	.5%
Scientific Calc.	.4	.1	.2	2	.3%	.1%	.6%	.1%
European Silicon Structures	.3	.0	.3	0	.3%	.0%	1.1%	.0%
Control Data	.3	.2	.0	132	.2%	.4%	.0%	5.0%
Exapt	.2	.1	.1	3	.2%	.2%	.2%	.1%
Secmai	.2	.1	.0	1	.2%	.2%	.1%	.1%
Dassault	.2	.0	.1	0	.2%	.0%	.5%	.0%
XAO Industrie	.2	.0	.1	8	.1%	.1%	.3%	.3%
Catalpa	.1	.0	.0	0	.1%	.1%	.1%	.0%
Autodesk	.1	.0	.1	0	.1%	.0%	.3%	.0%
Ferranti	.1	.0	.0	1	.0%	.1%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 13 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Gerber Systems	.1	.0	.0	1	.0%	.1%	.1%	.0%
T2 Solutions	.1	.0	.0	2	.0%	.1%	.0%	.1%
MacNeal-Schwendler	.0	.0	.0	0	.0%	.0%	.1%	.0%
Plessey Semiconductors	.0	.0	.0	0	.0%	.0%	.1%	.0%
Thom 6	.0	.0	.0	0	.0%	.0%	.1%	.0%
Other Companies	2.4	1.5	.7	147	2.1%	2.4%	2.4%	5.6%
All Companies	112.6	59.3	29.3	2,610	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	101.8	55.5	23.3	2,230	90.4%	93.6%	79.5%	85.4%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	10.8	3.8	6.0	380	9.6%	6.4%	20.5%	14.6%
All Hardware Companies	14.2	11.0	.0	603	12.6%	18.5%	.0%	23.1%
All Turnkey & SW Companies	98.4	48.3	29.3	2,007	87.4%	81.5%	100.0%	76.9%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 14  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
IBM	40.0	22.0	12.0	427	39.5%	36.7%	46.1%	20.1%
Prime Computer	17.0	5.6	6.6	175	16.8%	9.3%	25.4%	8.2%
Digital	11.0	9.2	.0	0	10.9%	15.3%	.0%	.0%
Intergraph	7.3	4.1	1.6	134	7.2%	6.9%	6.2%	6.3%
McDonnell Douglas	4.1	2.6	.7	321	4.1%	4.3%	2.6%	15.1%
Ferranti	2.6	1.5	.7	22	2.6%	2.5%	2.6%	1.0%
Matra Datavision	1.0	.8	.1	163	1.0%	1.3%	.4%	7.7%
Sysscan	.9	.7	.2	8	.9%	1.2%	.7%	.4%
Control Data	.8	.5	.1	276	.8%	.9%	.3%	13.0%
Dassault	.7	.0	.6	0	.7%	.0%	2.2%	.0%
Apollo	.6	.5	.0	23	.6%	.9%	.0%	1.1%
Morsk Data	.6	.4	.0	210	.6%	.7%	.1%	9.9%
Daisy Systems	.5	.3	.1	9	.5%	.5%	.5%	.4%
PAFEC	.5	.0	.5	0	.5%	.0%	1.8%	.0%
Westward	.5	.1	.0	49	.5%	.1%	.0%	2.3%
Exapt	.4	.3	.1	7	.4%	.5%	.3%	.3%
Sun	.4	.3	.0	12	.4%	.6%	.0%	.5%
MacNeal-Schwendler	.3	.0	.3	0	.3%	.0%	1.1%	.0%
Silvar-Lisco	.3	.0	.2	0	.3%	.0%	.8%	.0%
Siemens	.2	.2	.1	2	.2%	.3%	.3%	.1%
SDRC	.2	.0	.2	0	.2%	.0%	.8%	.0%
Scientific Calc.	.2	.0	.1	1	.2%	.0%	.5%	.1%
Unisys	.1	.0	.1	2	.1%	.1%	.3%	.1%
Synercom	.1	.0	.1	0	.1%	.0%	.2%	.0%
Cimlinc	.0	.0	.0	3	.0%	.0%	.0%	.1%
Olivetti	.0	.0	.0	3	.0%	.0%	.0%	.1%
T2 Solutions	.0	.0	.0	2	.0%	.0%	.0%	.1%
Thom 6	.0	.0	.0	0	.0%	.0%	.0%	.0%
Plessey Semiconductors	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)



# Market Share

TABLE NUMBER: 14 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Other Companies	9.9	11.1	.1	319	9.7%	18.6%	.4%	15.0%
All Companies	101.5	60.0	26.0	2,126	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	94.0	56.1	23.8	1,660	92.7%	93.5%	91.5%	78.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	7.4	3.9	2.2	466	7.3%	6.6%	8.5%	21.9%
All Hardware Companies	21.1	20.9	.0	295	20.8%	34.9%	.0%	13.9%
All Turnkey & SW Companies	80.4	39.1	26.0	1,830	79.2%	65.1%	100.0%	86.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 15  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	5.4	5.1	.3	843	18.5%	25.6%	3.5%	17.8%
Prime Computer	2.4	.4	1.8	22	8.3%	1.8%	21.1%	.5%
Autodesk	2.0	.0	2.0	0	6.7%	.0%	22.7%	.0%
Racal-Redac	1.1	.0	1.1	0	3.9%	.0%	13.2%	.0%
Hewlett-Packard	1.0	1.0	.0	199	3.5%	5.1%	.0%	4.2%
Olivetti	.5	.2	.2	101	1.7%	1.2%	2.4%	2.1%
Intercad	.5	.2	.2	25	1.6%	1.2%	1.7%	.5%
Intergraph	.4	.0	.4	0	1.3%	.0%	4.1%	.0%
Logotec	.4	.3	.0	2	1.2%	1.4%	.5%	.0%
CADAM	.3	.0	.3	0	1.0%	.0%	3.0%	.0%
Robocom	.2	.0	.2	0	.8%	.0%	2.7%	.0%
RHV Software Systems	.2	.0	.2	0	.8%	.0%	2.6%	.0%
ISICAD	.2	.0	.2	0	.7%	.0%	2.3%	.0%
Superdraft	.2	.0	.2	0	.6%	.2%	1.7%	.0%
Daisy Systems	.1	.0	.1	0	.5%	.0%	1.3%	.0%
Westward	.1	.0	.0	153	.4%	.0%	.0%	3.2%
Cimatron	.1	.1	.1	12	.4%	.3%	.6%	.3%
Sycotronic AG	.1	.0	.1	0	.3%	.0%	1.0%	.0%
CAD-UL	.1	.0	.1	2	.3%	.1%	.7%	.0%
European Silicon Structures	.1	.0	.1	0	.3%	.0%	.9%	.0%
Ziegler Instruments GmbH	.1	.0	.1	0	.2%	.0%	.7%	.0%
Norsk Data	.0	.0	.0	31	.1%	.0%	.0%	.7%
Valid	.0	.0	.0	0	.1%	.0%	.0%	.0%
MacNeal-Schwendler	.0	.0	.0	0	.0%	.0%	.1%	.0%

(Continued)

# Market Share

TABLE NUMBER: 15 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
Other Companies	7.9	6.6	1.1	2,094	27.2%	33.1%	13.2%	44.1%
All Companies	29.2	19.8	8.6	4,747	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 25.6	 19.0	 6.1	 4,420	 87.5%	 95.7%	 71.2%	 93.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	3.7	.9	2.5	327	12.5%	4.3%	28.8%	6.9%
All Hardware Companies	18.0	18.0	.0	4,302	61.5%	90.7%	.0%	90.6%
All Turnkey & SW Companies	11.3	1.8	8.6	445	38.5%	9.3%	100.0%	9.4%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 16  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Prime Computer	45.6	20.5	12.2	511	29.5%	22.2%	32.9%	7.9%
IBM	42.2	24.9	11.5	1,002	27.2%	26.9%	31.0%	15.5%
Digital	9.3	7.1	.0	118	6.0%	7.7%	.0%	1.8%
Intergraph	6.6	4.0	1.2	72	4.2%	4.3%	3.2%	1.1%
McDonnell Douglas	4.3	2.8	.5	357	2.8%	3.1%	1.5%	5.5%
Hewlett-Packard	3.9	2.6	.8	164	2.5%	2.8%	2.1%	2.5%
Ferranti	2.7	1.5	.7	22	1.7%	1.7%	1.8%	.3%
PAFEC	2.5	.0	2.5	0	1.6%	.0%	6.8%	.0%
Apollo	2.4	2.0	.0	103	1.5%	2.2%	.0%	1.6%
Siemens	2.2	1.3	.7	48	1.4%	1.4%	1.8%	.7%
ISICAD	1.6	1.0	.4	17	1.1%	1.1%	1.1%	.3%
Autodesk	1.1	.0	1.1	0	.7%	.0%	2.9%	.0%
Cimatron	1.1	.9	.1	122	.7%	.9%	.4%	1.9%
Sun	1.0	.9	.0	49	.7%	1.0%	.0%	.8%
Matra Datavision	1.0	.8	.1	163	.7%	.8%	.3%	2.5%
Control Data	1.0	.7	.1	370	.6%	.8%	.3%	5.7%
Norsk Data	1.0	.7	.1	419	.6%	.8%	.1%	6.5%
Cimlinc	.9	.4	.3	44	.5%	.5%	.8%	.7%
Dassault	.7	.0	.6	0	.5%	.0%	1.6%	.0%
SDRC	.7	.0	.7	0	.4%	.0%	1.8%	.0%
Exapt	.6	.4	.1	10	.4%	.4%	.4%	.2%
Westward	.6	.1	.0	192	.4%	.1%	.0%	3.0%
Unisys	.5	.1	.3	14	.3%	.1%	.8%	.2%
Olivetti	.3	.2	.2	62	.2%	.2%	.4%	1.0%
MacNeal-Schwendler	.3	.0	.3	0	.2%	.0%	.9%	.0%
Logotec	.3	.2	.0	2	.2%	.2%	.1%	.0%
Intercad	.2	.1	.1	12	.1%	.1%	.2%	.2%
RHV Software Systems	.2	.0	.2	0	.1%	.0%	.5%	.0%
Superdraft	.2	.0	.2	0	.1%	.0%	.4%	.0%
Catalpa	.1	.0	.0	0	.1%	.0%	.1%	.0%
Robocom	.1	.0	.1	0	.1%	.0%	.3%	.0%
Gerber Systems	.1	.0	.0	1	.0%	.0%	.1%	.0%

(Continued)

# Market Share

TABLE NUMBER: 16 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.1%	.0%
Other Companies	14.6	15.0	.9	1,791	9.5%	16.2%	2.4%	27.7%
All Companies	154.7	92.4	37.0	6,471	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 141.0	 86.2	 31.4	 5,419	 91.2%	 93.3%	 84.9%	 83.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	13.7	6.2	5.6	1,052	8.8%	6.7%	15.1%	16.3%
All Hardware Companies	33.1	32.3	.0	3,420	21.4%	34.9%	.0%	52.8%
All Turnkey & SW Companies	121.5	60.1	37.0	3,051	78.6%	65.1%	100.0%	47.2%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 17  
 TITLE: 1988 Market Share  
 APPLICATION: AEC  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Intergraph	9.2	5.6	1.7	101	28.1%	28.6%	23.7%	6.7%
Prime Computer	8.0	3.6	2.2	109	24.6%	18.4%	31.2%	7.3%
IBM	2.8	2.1	.4	227	8.5%	10.6%	6.2%	15.2%
Digital	2.6	1.9	.0	32	7.8%	9.9%	.0%	2.2%
McDonnell Douglas	1.7	1.1	.3	112	5.3%	5.8%	3.5%	7.5%
Hewlett-Packard	1.1	.8	.2	83	3.4%	4.1%	2.6%	5.5%
Autodesk	.7	.0	.7	0	2.2%	.0%	10.2%	.0%
Apollo	.7	.6	.0	31	2.1%	3.1%	.0%	2.1%
PAFEC	.6	.0	.6	0	1.9%	.0%	8.9%	.0%
ISICAD	.4	.3	.1	4	1.3%	1.3%	1.4%	.3%
Siemens	.4	.3	.1	8	1.3%	1.3%	1.8%	.5%
Olivetti	.2	.1	.1	36	.5%	.3%	.9%	2.4%
Dassault	.1	.0	.1	0	.3%	.0%	1.3%	.0%
Robocom	.1	.0	.1	0	.3%	.0%	1.4%	.0%
Sun	.1	.1	.0	4	.2%	.4%	.0%	.3%
T2 Solutions	.1	.0	.0	5	.2%	.2%	.1%	.3%
Cimlinc	.0	.0	.0	1	.1%	.1%	.1%	.1%
Westward	.0	.0	.0	10	.1%	.0%	.0%	.7%
Control Data	.0	.0	.0	9	.0%	.0%	.0%	.6%
RHV Software Systems	.0	.0	.0	0	.0%	.0%	.1%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.1%	.0%
Other Companies	2.3	2.1	.1	520	7.1%	10.8%	1.8%	34.8%
All Companies	32.6	19.6	7.1	1,494	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	31.1	19.3	6.0	1,436	95.3%	98.2%	85.2%	96.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.6	.4	1.0	59	4.7%	1.8%	14.8%	3.9%
All Hardware Companies	7.9	7.2	.0	1,057	24.1%	36.4%	.0%	70.7%
All Turnkey & SW Companies	24.8	12.5	7.1	437	75.9%	63.6%	100.0%	29.3%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 18  
 TITLE: 1988 Market Share  
 APPLICATION: Mapping  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Intergraph	4.5	2.7	.8	49	40.2%	39.7%	34.5%	23.7%
Digital	1.7	1.3	.0	21	15.2%	18.7%	.0%	10.3%
IBM	1.3	.8	.3	36	11.6%	11.2%	14.5%	17.5%
Sysscan	.9	.7	.2	8	7.8%	10.2%	7.7%	4.0%
Prime Computer	.6	.3	.2	6	5.8%	4.5%	6.8%	3.1%
Siemens	.4	.3	.1	8	3.9%	3.8%	5.5%	3.9%
McDonnell Douglas	.1	.1	.0	2	1.1%	1.2%	.9%	1.1%
Apollo	.1	.1	.0	3	.6%	.9%	.0%	1.4%
Autodesk	.1	.0	.1	0	.6%	.0%	3.0%	.0%
Sun	.1	.1	.0	3	.5%	.9%	.0%	1.5%
Synercom	.1	.0	.1	0	.5%	.0%	2.1%	.0%
RHV Software Systems	.0	.0	.0	0	.1%	.0%	.4%	.0%
Robocom	.0	.0	.0	0	.1%	.0%	.4%	.0%
Sycotronic AG	.0	.0	.0	0	.1%	.0%	.4%	.0%
Other Companies	.4	.4	.0	51	4.0%	5.8%	1.3%	24.7%
All Companies	11.1	6.9	2.4	206	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	9.8	5.9	2.0	190	88.0%	86.0%	85.5%	92.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.3	1.0	.3	16	12.0%	14.0%	14.5%	7.9%
All Hardware Companies	2.4	2.0	.0	113	21.7%	28.9%	.0%	54.5%
All Turnkey & SW Companies	8.7	4.9	2.4	94	78.3%	71.1%	100.0%	45.5%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 19  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Mentor Graphics	9.4	3.1	5.2	288	21.0%	15.4%	29.5%	22.0%
Daisy Systems	4.7	2.6	1.3	199	10.4%	12.7%	7.2%	15.1%
Prime Computer	4.3	2.1	1.0	35	9.6%	10.3%	5.8%	2.7%
Digital	3.4	2.6	.0	43	7.6%	12.8%	.0%	3.3%
Racal-Redac	3.2	.3	2.7	6	7.2%	1.5%	15.1%	.5%
Apollo	2.7	2.3	.0	118	6.0%	11.5%	.0%	9.0%
Intergraph	1.7	1.0	.3	18	3.7%	5.0%	1.7%	1.4%
Silvar-Lisco	1.6	.0	1.1	0	3.6%	.0%	6.3%	.0%
Hewlett-Packard	1.4	1.0	.3	78	3.2%	4.7%	1.5%	6.0%
IBM	1.4	.9	.3	50	3.0%	4.2%	1.9%	3.8%
Sun	1.2	1.1	.0	59	2.8%	5.5%	.0%	4.5%
Calay	.6	.4	.1	8	1.4%	2.0%	.7%	.6%
Scientific Calc.	.5	.1	.3	3	1.2%	.4%	1.7%	.2%
European Silicon Structures	.4	.0	.4	0	.9%	.0%	2.3%	.0%
Valid	.4	.2	.2	4	.9%	.8%	1.0%	.3%
CADAM	.3	.0	.3	0	.7%	.0%	1.5%	.0%
Intercad	.2	.1	.1	13	.5%	.6%	.5%	1.0%
Autodesk	.2	.0	.2	0	.4%	.0%	1.0%	.0%
Secmai	.2	.1	.0	2	.4%	.6%	.2%	.1%
XAO Industrie	.2	.0	.1	8	.3%	.2%	.6%	.6%
Control Data	.1	.0	.0	29	.2%	.2%	.0%	2.2%
Logotec	.1	.1	.0	1	.2%	.3%	.1%	.0%
Sycotronic AG	.1	.0	.1	0	.2%	.0%	.5%	.0%
CAD-UL	.1	.0	.1	2	.2%	.0%	.3%	.2%
Thom 6	.1	.0	.0	0	.1%	.0%	.2%	.0%
Olivetti	.0	.0	.0	6	.1%	.2%	.1%	.5%
Plessey Semiconductors	.0	.0	.0	0	.1%	.0%	.2%	.0%
Dassault	.0	.0	.0	0	.1%	.0%	.1%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.1%	.0%	.2%	.0%
RHV Software Systems	.0	.0	.0	0	.0%	.0%	.1%	.0%
Robocom	.0	.0	.0	0	.0%	.0%	.1%	.0%

(Continued)



# Market Share

TABLE NUMBER: 19 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Other Companies	2.8	1.7	.9	198	6.2%	8.3%	5.1%	15.1%
All Companies	44.9	20.2	17.5	1,311	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 39.6	 19.1	 13.8	 1,266	 88.1%	 94.6%	 78.8%	 96.5%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	5.3	1.1	3.7	45	11.9%	5.4%	21.2%	3.5%
All Hardware Companies	9.9	8.5	.0	611	22.0%	42.0%	.0%	46.6%
All Turnkey & SW Companies	35.0	11.7	17.5	700	78.0%	58.0%	100.0%	53.4%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 20  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Mentor Graphics	6.3	2.1	3.5	250	31.5%	22.8%	45.3%	31.3%
Daisy Systems	2.1	1.1	.6	151	10.4%	11.6%	7.3%	18.9%
Digital	1.7	1.3	.0	21	8.5%	14.0%	.0%	2.7%
Apollo	1.7	1.5	.0	74	8.4%	15.8%	.0%	9.3%
Prime Computer	1.3	.7	.3	14	6.7%	7.0%	4.3%	1.8%
Sun	.7	.6	.0	32	3.3%	6.5%	.0%	4.0%
Silvar-Lisco	.7	.0	.4	0	3.2%	.0%	5.7%	.0%
Racal-Redac	.6	.1	.5	1	3.1%	.7%	6.5%	.2%
Hewlett-Packard	.6	.4	.1	41	3.1%	4.6%	1.4%	5.1%
Valid	.3	.1	.1	3	1.7%	1.5%	1.7%	.4%
Intergraph	.2	.1	.0	2	.8%	1.1%	.4%	.2%
XAO Industrie	.2	.0	.1	8	.7%	.4%	1.3%	1.0%
IBM	.1	.1	.0	21	.6%	1.4%	.0%	2.6%
Autodesk	.1	.0	.1	0	.4%	.0%	1.2%	.0%
Intercad	.1	.1	.0	5	.4%	.5%	.4%	.6%
Logotec	.1	.1	.0	1	.4%	.8%	.1%	.1%
Control Data	.1	.0	.0	8	.3%	.2%	.0%	1.0%
Thom 6	.1	.0	.0	0	.2%	.0%	.5%	.0%
Dassault	.0	.0	.0	0	.1%	.0%	.3%	.0%
RHV Software Systems	.0	.0	.0	0	.1%	.0%	.3%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.1%	.0%	.3%	.0%
Robocom	.0	.0	.0	0	.0%	.0%	.1%	.0%
Secmai	.0	.0	.0	0	.0%	.1%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 20 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****
Other Companies	1.1	.8	.2	102	5.4%	8.6%	3.0%	12.8%
All Companies	20.1	9.2	7.7	798	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	19.0	9.0	6.9	783	94.5%	97.5%	90.2%	98.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.1	.2	.8	15	5.5%	2.5%	9.8%	1.9%
All Hardware Companies	5.2	4.5	.0	313	26.1%	48.8%	.0%	39.2%
All Turnkey & SW Companies	14.8	4.7	7.7	485	73.9%	51.2%	100.0%	60.8%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 21  
 TITLE: 1988 Market Share  
 APPLICATION: IC Layout  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Silvar-Lisco	1.0	.0	.7	0	16.8%	.0%	20.8%	.0%
Mentor Graphics	.8	.3	.4	17	13.0%	15.1%	13.2%	19.6%
Digital	.5	.4	.0	6	8.8%	23.5%	.0%	7.3%
Apollo	.5	.4	.0	21	8.5%	24.7%	.0%	24.2%
European Silicon Structures	.4	.0	.4	0	7.1%	.0%	12.9%	.0%
Sun	.3	.3	.0	15	5.5%	16.9%	.0%	16.9%
Intergraph	.2	.1	.0	2	3.5%	7.2%	1.3%	2.4%
Daisy Systems	.1	.0	.0	6	1.6%	2.4%	.6%	6.3%
Hewlett-Packard	.1	.0	.0	3	1.0%	2.4%	.3%	3.2%
Plessey Semiconductors	.0	.0	.0	0	.7%	.0%	.9%	.0%
Valid	.0	.0	.0	0	.5%	.6%	.6%	.1%
Control Data	.0	.0	.0	9	.2%	.0%	.0%	9.7%
Other Companies	.6	.1	.4	6	10.4%	6.6%	13.9%	7.0%
All Companies	5.8	1.7	3.2	88	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	5.3	1.7	2.7	88	92.2%	101.8%	86.1%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.5	(.0)	.4	0	7.8%	-1.8%	13.9%	.0%
All Hardware Companies	1.5	1.2	.0	51	25.6%	74.1%	.0%	57.8%
All Turnkey & SW Companies	4.3	.4	3.2	37	74.4%	25.9%	100.0%	42.2%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 22  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Prime Computer	3.0	1.4	.7	21	15.5%	15.3%	10.3%	4.8%
Racal-Redac	2.6	.2	2.2	5	13.7%	2.6%	32.0%	1.2%
Daisy Systems	2.5	1.5	.7	42	13.0%	15.7%	10.3%	9.9%
Mentor Graphics	2.4	.8	1.3	21	12.3%	8.3%	19.1%	4.8%
Intergraph	1.3	.8	.2	14	6.8%	8.5%	3.3%	3.3%
IBM	1.2	.7	.3	29	6.5%	7.7%	5.1%	6.8%
Digital	1.2	.9	.0	15	6.2%	9.7%	.0%	3.5%
Hewlett-Packard	.8	.5	.1	35	3.9%	5.3%	2.1%	8.1%
Calay	.6	.4	.1	8	3.3%	4.4%	1.9%	1.8%
Scientific Calc.	.5	.1	.3	3	2.8%	1.0%	4.5%	.7%
Apollo	.5	.5	.0	23	2.7%	4.8%	.0%	5.3%
CADAM	.3	.0	.3	0	1.6%	.0%	3.9%	.0%
Sun	.3	.2	.0	13	1.4%	2.6%	.0%	2.9%
Secmai	.2	.1	.0	1	.9%	1.2%	.4%	.3%
Intercad	.2	.1	.1	8	.8%	.9%	.7%	1.9%
Autodesk	.1	.0	.1	0	.5%	.0%	1.3%	.0%
Sycotronic AG	.1	.0	.1	0	.5%	.0%	1.2%	.0%
CAD-UL	.1	.0	.1	2	.4%	.1%	.9%	.5%
Control Data	.0	.0	.0	13	.2%	.2%	.0%	3.0%
Olivetti	.0	.0	.0	6	.2%	.4%	.1%	1.5%
Valid	.0	.0	.0	0	.2%	.2%	.3%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.1%	.0%	.1%	.0%

(Continued)

# Market Share

TABLE NUMBER: 22 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: Benelux  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Other Companies	1.1	.8	.2	90	5.7%	8.3%	3.4%	21.3%
All Companies	19.0	9.3	6.7	425	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	15.3	8.4	4.2	395	80.1%	90.5%	62.4%	92.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	3.8	.9	2.5	30	19.9%	9.5%	37.6%	7.1%
All Hardware Companies	3.2	2.8	.0	247	16.5%	29.6%	.0%	58.2%
All Turnkey & SW Companies	15.9	6.6	6.7	178	83.5%	70.4%	100.0%	41.8%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 23  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
IBM	120.2	88.1	16.0	3,350	22.6%	27.2%	12.6%	22.4%
Prime Computer	68.2	30.1	18.8	625	12.8%	9.3%	14.8%	4.2%
Digital	40.4	33.5	.0	509	7.6%	10.3%	.0%	3.4%
Control Data	25.9	17.9	3.4	120	4.9%	5.5%	2.6%	.8%
Intergraph	22.7	13.6	4.4	248	4.3%	4.2%	3.4%	1.7%
Matra Datavision	20.1	11.1	6.0	13	3.8%	3.4%	4.7%	.1%
Cisigraph	16.0	7.9	6.7	0	3.0%	2.4%	5.3%	.0%
Mentor Graphics	13.9	7.1	5.1	212	2.6%	2.2%	4.0%	1.4%
Valid	13.7	7.2	4.0	117	2.6%	2.2%	3.1%	.8%
Daisy Systems	10.0	4.3	3.5	178	1.9%	1.3%	2.8%	1.2%
Apollo	9.4	8.3	.0	412	1.8%	2.5%	.0%	2.8%
Schlumberger (Applicon)	8.8	5.4	.9	145	1.7%	1.7%	.7%	1.0%
Secmai	7.8	4.7	1.5	64	1.5%	1.4%	1.2%	.4%
Ferranti	7.8	5.9	.6	66	1.5%	1.8%	.5%	.4%
McDonnell Douglas	6.8	4.7	.7	197	1.3%	1.5%	.5%	1.3%
Hewlett-Packard	6.5	4.2	1.4	325	1.2%	1.3%	1.1%	2.2%
Dassault	6.2	.0	5.0	0	1.2%	.0%	4.0%	.0%
Racal-Redac	5.6	.5	4.6	11	1.1%	.2%	3.6%	.1%
Assigraph	5.3	.0	2.1	31	1.0%	.0%	1.7%	.2%
Autodesk	4.0	.0	4.0	0	.8%	.0%	3.2%	.0%
Sun	3.9	3.5	.0	188	.7%	1.1%	.0%	1.3%
PAFEC	3.7	.0	3.7	0	.7%	.0%	2.9%	.0%
Unisys	3.6	2.0	1.1	41	.7%	.6%	.9%	.3%
Gerber Systems	3.5	2.1	1.4	56	.7%	.7%	1.1%	.4%
Olivetti	3.4	1.5	1.3	600	.6%	.4%	1.0%	4.0%
Silvar-Lisco	2.3	.0	1.6	0	.4%	.0%	1.2%	.0%
Scientific Calc.	2.2	.8	.7	7	.4%	.3%	.6%	.0%
Thom 6	2.1	.0	1.9	0	.4%	.0%	1.5%	.0%
Zycad	2.1	.1	1.8	0	.4%	.0%	1.4%	.0%
ICL	2.1	1.6	.4	38	.4%	.5%	.3%	.3%
SDRC	2.0	.0	2.0	0	.4%	.0%	1.6%	.0%
XAO Industrie	1.3	.5	.7	72	.3%	.2%	.6%	.5%

(Continued)

# Market Share

TABLE NUMBER: 23 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
CADAM	1.3	.0	1.2	0	.2%	.0%	.9%	.0%
DECAD	1.2	.3	.7	0	.2%	.1%	.5%	.0%
Norsk Data	1.1	.8	.1	34	.2%	.2%	.0%	.2%
MacNeal-Schwendler	1.1	.0	1.0	0	.2%	.0%	.8%	.0%
ISICAD	1.0	.5	.3	11	.2%	.2%	.3%	.1%
Vision 3D	1.0	1.0	.0	12	.2%	.3%	.0%	.1%
Catalpa	.9	.2	.4	0	.2%	.1%	.3%	.0%
Cimlinc	.9	.5	.3	45	.2%	.1%	.2%	.3%
Albert Nestler	.8	.4	.3	21	.2%	.1%	.2%	.1%
Siemens	.7	.4	.2	14	.1%	.1%	.2%	.1%
Superdraft	.4	.1	.4	0	.1%	.0%	.3%	.0%
Calay	.4	.1	.2	4	.1%	.0%	.2%	.0%
European Silicon Structures	.3	.0	.3	0	.1%	.0%	.2%	.0%
RHV Software Systems	.2	.0	.2	0	.0%	.0%	.1%	.0%
Aucotec	.1	.0	.0	53	.0%	.0%	.0%	.4%
Robocom	.1	.0	.1	0	.0%	.0%	.1%	.0%
Ziegler Instruments GmbH	.1	.0	.1	0	.0%	.0%	.0%	.0%
Synercom	.0	.0	.0	0	.0%	.0%	.0%	.0%
Sycotronic AG	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	54.7	44.9	8.4	4,461	10.3%	13.8%	6.6%	29.8%
All Companies	531.1	324.4	127.2	14,977	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	443.3	287.8	89.9	13,944	83.5%	88.7%	70.7%	93.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	87.9	36.6	37.3	1,033	16.5%	11.3%	29.3%	6.9%
All Hardware Companies	120.5	115.0	.0	10,340	22.7%	35.5%	.0%	69.0%
All Turnkey & SW Companies	410.5	209.3	127.2	4,637	77.3%	64.5%	100.0%	31.0%

Source: Dataquest  
April 1989



# Market Share

TABLE NUMBER: 24  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Prime Computer	44.8	20.8	10.9	493	21.8%	19.6%	18.3%	15.6%
Intergraph	14.7	8.7	2.9	109	7.2%	8.2%	4.9%	3.5%
Digital	14.1	11.7	.0	509	6.9%	11.1%	.0%	16.1%
Mentor Graphics	13.9	7.1	5.1	212	6.8%	6.7%	8.6%	6.7%
Valid	13.1	6.9	3.8	109	6.4%	6.5%	6.4%	3.5%
Daisy Systems	9.3	4.0	3.3	164	4.5%	3.8%	5.5%	5.2%
Apollo	8.5	7.5	.0	376	4.1%	7.0%	.0%	11.9%
Secmai	7.6	4.6	1.5	62	3.7%	4.3%	2.6%	2.0%
Control Data	6.8	4.5	1.2	111	3.3%	4.3%	2.0%	3.5%
Schlumberger (Applicon)	6.0	3.7	.6	81	2.9%	3.5%	1.0%	2.6%
Hewlett-Packard	5.5	3.2	1.4	126	2.7%	3.0%	2.3%	4.0%
IBM	5.3	3.9	.6	114	2.6%	3.7%	1.1%	3.6%
Cisigraph	4.8	2.4	2.0	0	2.3%	2.3%	3.4%	.0%
Racal-Redac	3.7	.5	2.7	11	1.8%	.5%	4.5%	.3%
Gerber Systems	3.5	2.1	1.4	56	1.7%	2.0%	2.3%	1.8%
Sun	3.4	3.0	.0	169	1.6%	2.8%	.0%	5.3%
PAFEC	3.2	.0	3.2	0	1.5%	.0%	5.3%	.0%
Assigraph	2.9	.0	1.1	17	1.4%	.0%	1.8%	.5%
Unisys	2.7	1.5	.8	18	1.3%	1.4%	1.4%	.6%
McDonnell Douglas	2.2	1.4	.4	38	1.1%	1.3%	.6%	1.2%
ICL	2.1	1.6	.4	38	1.0%	1.5%	.6%	1.2%
Silvar-Lisco	1.9	.0	1.3	0	.9%	.0%	2.2%	.0%
Thom 6	1.4	.0	1.3	0	.7%	.0%	2.2%	.0%
Scientific Calc.	1.4	.7	.3	6	.7%	.7%	.5%	.2%
SDRC	1.4	.0	1.4	0	.7%	.0%	2.3%	.0%
XAO Industrie	1.3	.5	.7	72	.7%	.5%	1.2%	2.3%
Dassault	1.2	.0	1.0	0	.6%	.0%	1.7%	.0%
DECAD	1.1	.2	.7	0	.5%	.2%	1.1%	.0%
ISICAD	.9	.5	.2	11	.5%	.5%	.4%	.3%
Catalpa	.9	.2	.4	0	.4%	.2%	.6%	.0%
Cimline	.8	.4	.3	42	.4%	.4%	.5%	1.3%
Albert Nestler	.8	.4	.3	17	.4%	.3%	.5%	.5%

(Continued)

# Market Share

TABLE NUMBER: 24 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Siemens	.5	.3	.2	12	.3%	.3%	.3%	.4%
Norsk Data	.4	.3	.0	15	.2%	.3%	.0%	.5%
Calay	.4	.1	.2	4	.2%	.1%	.4%	.1%
European Silicon Structures	.3	.0	.3	0	.1%	.0%	.4%	.0%
Ferranti	.2	.1	.1	3	.1%	.1%	.1%	.1%
Autodesk	.2	.0	.2	0	.1%	.0%	.3%	.0%
MacNeal-Schwendler	.1	.0	.1	0	.1%	.0%	.2%	.0%
Zycad	.0	.0	.0	0	.0%	.0%	.0%	.0%
Aucotec	.0	.0	.0	3	.0%	.0%	.0%	.1%
Other Companies	16.2	6.5	5.8	208	7.9%	6.1%	9.7%	6.6%
All Companies	205.3	105.9	59.5	3,164	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	173.4	94.8	44.1	2,911	84.4%	89.5%	74.0%	92.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	31.9	11.1	15.5	253	15.6%	10.5%	26.0%	8.0%
All Hardware Companies	29.6	25.4	.0	1,205	14.4%	24.0%	.0%	38.1%
All Turnkey & SW Companies	175.8	80.5	59.5	1,960	85.6%	76.0%	100.0%	61.9%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 25  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
IBM	101.0	70.7	15.2	1,078	37.6%	40.0%	28.2%	43.4%
Digital	26.3	21.8	.0	0	9.8%	12.3%	.0%	.0%
Prime Computer	20.8	8.9	6.0	107	7.7%	5.0%	11.1%	4.3%
Matra Datavision	20.1	11.1	6.0	13	7.5%	6.3%	11.2%	.5%
Control Data	19.1	13.4	2.2	9	7.1%	7.6%	4.1%	.4%
Cisigraph	11.2	5.5	4.7	0	4.2%	3.1%	8.7%	.0%
Ferranti	7.6	5.8	.6	63	2.8%	3.3%	1.1%	2.5%
Intergraph	7.5	4.9	1.1	139	2.8%	2.8%	2.0%	5.6%
Dassault	4.9	.0	4.0	0	1.8%	.0%	7.5%	.0%
McDonnell Douglas	4.6	3.3	.3	160	1.7%	1.9%	.6%	6.4%
Schlumberger (Applicon)	2.8	1.7	.3	64	1.1%	1.0%	.5%	2.6%
Assignaph	2.4	.0	1.1	13	.9%	.0%	2.0%	.5%
Zycad	2.1	.0	1.8	0	.8%	.0%	3.4%	.0%
MacNeal-Schwendler	1.0	.0	.9	0	.4%	.0%	1.7%	.0%
Apollo	.9	.8	.0	37	.4%	.5%	.0%	1.5%
Unisys	.9	.5	.3	23	.3%	.3%	.5%	.9%
Scientific Calc.	.8	.1	.4	1	.3%	.1%	.7%	.0%
Thom 6	.7	.0	.6	0	.3%	.0%	1.1%	.0%
SDRC	.7	.0	.7	0	.2%	.0%	1.2%	.0%
Norsk Data	.6	.5	.0	17	.2%	.3%	.1%	.7%
Sun	.6	.5	.0	19	.2%	.3%	.0%	.8%
PAFEC	.6	.0	.6	0	.2%	.0%	1.1%	.0%
Daisy Systems	.5	.3	.1	14	.2%	.2%	.2%	.6%
Silvar-Lisco	.4	.0	.3	0	.2%	.0%	.5%	.0%
Olivetti	.2	.1	.1	15	.1%	.1%	.2%	.6%
Siemens	.2	.1	.1	1	.1%	.1%	.1%	.1%
DECAD	.1	.0	.0	0	.0%	.0%	.1%	.0%
Cimlinc	.0	.0	.0	3	.0%	.0%	.0%	.1%
Synercom	.0	.0	.0	0	.0%	.0%	.1%	.0%
Aucotec	.0	.0	.0	3	.0%	.0%	.0%	.1%

(Continued)

# Market Share

TABLE NUMBER: 25 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Other Companies	25.4	26.3	1.7	686	9.5%	14.9%	3.2%	27.6%
All Companies	268.3	176.7	53.8	2,483	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 219.8	 153.7	 35.9	 2,358	 81.9%	 87.0%	 66.8%	 94.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	48.6	23.0	17.8	125	18.1%	13.0%	33.2%	5.1%
All Hardware Companies	54.4	53.2	.0	725	20.3%	30.1%	.0%	29.2%
All Turnkey & SW Companies	213.9	123.5	53.8	1,758	79.7%	69.9%	100.0%	70.8%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 26  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company	Total				Market Share			
	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	13.9	13.6	.2	2,159	24.2%	32.4%	1.6%	23.1%
Autodesk	3.8	.0	3.8	0	6.7%	.0%	27.5%	.0%
Olivetti	3.2	1.4	1.2	586	5.6%	3.2%	8.7%	6.3%
Prime Computer	2.7	.4	2.0	25	4.7%	1.1%	14.3%	.3%
Racal-Redac	2.0	.0	2.0	0	3.4%	.0%	14.1%	.0%
CADAM	1.3	.0	1.2	0	2.3%	.0%	8.4%	.0%
Hewlett-Packard	1.0	1.0	.0	199	1.8%	2.4%	.0%	2.1%
Vision 3D	1.0	1.0	.0	12	1.7%	2.3%	.0%	.1%
Valid	.6	.3	.2	8	1.0%	.7%	1.2%	.1%
Superdraft	.4	.1	.4	0	.7%	.1%	3.0%	.0%
Intergraph	.4	.0	.4	0	.7%	.0%	2.7%	.0%
RHV Software Systems	.2	.0	.2	0	.3%	.0%	1.1%	.0%
Secmai	.2	.1	.0	3	.3%	.2%	.1%	.0%
Daisy Systems	.1	.0	.1	0	.2%	.0%	.8%	.0%
Aucotec	.1	.0	.0	47	.2%	.0%	.2%	.5%
ISICAD	.1	.0	.1	0	.2%	.0%	.7%	.0%
Robocom	.1	.0	.1	0	.1%	.0%	.6%	.0%
Albert Westler	.1	.0	.0	5	.1%	.1%	.1%	.0%
European Silicon Structures	.1	.0	.1	0	.1%	.0%	.4%	.0%
Ziegler Instruments GmbH	.1	.0	.1	0	.1%	.0%	.4%	.0%
Sycotronic AG	.0	.0	.0	0	.1%	.0%	.1%	.0%
MacNeal-Schwendler	.0	.0	.0	0	.0%	.0%	.1%	.0%
Norsk Data	.0	.0	.0	3	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 26 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Other Companies	13.1	12.1	.9	3,567	22.8%	29.0%	6.2%	38.2%
All Companies	57.4	41.8	14.0	9,329	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 50.1	 39.3	 9.9	 8,675	 87.2%	 94.0%	 71.0%	 93.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	7.3	2.5	4.1	655	12.8%	6.0%	29.0%	7.0%
All Hardware Companies	36.5	36.5	.0	8,410	63.5%	87.3%	.0%	90.1%
All Turnkey & SW Companies	20.9	5.3	14.0	919	36.5%	12.7%	100.0%	9.9%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 27  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	105.3	76.4	14.5	2,502	30.5%	33.6%	20.6%	26.8%
Prime Computer	53.2	23.5	14.7	472	15.4%	10.3%	21.0%	5.1%
Control Data	22.6	15.6	2.9	99	6.5%	6.9%	4.2%	1.1%
Digital	22.2	18.5	.0	280	6.4%	8.1%	.0%	3.0%
Matra Datavision	20.1	11.1	6.0	13	5.8%	4.9%	8.6%	.1%
Cisigraph	16.0	7.9	6.7	0	4.6%	3.5%	9.6%	.0%
Schlumberger (Applicon)	8.7	5.3	.9	142	2.5%	2.3%	1.2%	1.5%
Ferranti	7.8	5.9	.6	66	2.2%	2.6%	.9%	.7%
Intergraph	6.8	4.1	1.3	74	2.0%	1.8%	1.9%	.8%
Dassault	5.2	.0	4.3	0	1.5%	.0%	6.1%	.0%
McDonnell Douglas	4.7	3.3	.5	79	1.4%	1.4%	.7%	.8%
Hewlett-Packard	3.9	2.5	.9	164	1.1%	1.1%	1.2%	1.8%
Apollo	3.7	3.3	.0	162	1.1%	1.4%	.0%	1.7%
Unisys	3.6	2.0	1.1	41	1.0%	.9%	1.6%	.4%
Gerber Systems	3.5	2.1	1.4	56	1.0%	.9%	2.0%	.6%
PAFEC	3.0	.0	3.0	0	.9%	.0%	4.2%	.0%
SDRC	2.0	.0	2.0	0	.6%	.0%	2.9%	.0%
Autodesk	1.8	.0	1.8	0	.5%	.0%	2.6%	.0%
Olivetti	1.8	.7	.8	317	.5%	.3%	1.2%	3.4%
Sun	1.7	1.6	.0	83	.5%	.7%	.0%	.9%
Norsk Data	1.1	.8	.1	34	.3%	.4%	.1%	.4%
MacNeal-Schwendler	1.1	.0	1.0	0	.3%	.0%	1.5%	.0%
ICL	1.0	.8	.2	19	.3%	.3%	.3%	.2%
Vision 3D	1.0	1.0	.0	12	.3%	.4%	.0%	.1%
Catalpa	.9	.2	.4	0	.3%	.1%	.5%	.0%
Cimlinc	.9	.5	.3	44	.2%	.2%	.4%	.5%
Albert Nestler	.8	.4	.3	21	.2%	.2%	.4%	.2%
ISICAD	.8	.4	.3	8	.2%	.2%	.4%	.1%
Superdraft	.4	.1	.4	0	.1%	.0%	.6%	.0%
RHV Software Systems	.1	.0	.1	0	.0%	.0%	.2%	.0%
Robocom	.0	.0	.0	0	.0%	.0%	.1%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 27 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Other Companies	26.8	30.1	.9	2,585	7.8%	13.2%	1.3%	27.7%
All Companies	345.5	227.4	70.1	9,337	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 287.0	 198.8	 47.5	 8,855	 83.1%	 87.5%	 67.7%	 94.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	58.5	28.5	22.6	483	16.9%	12.5%	32.3%	5.2%
All Hardware Companies	75.9	74.8	.0	6,501	22.0%	32.9%	.0%	69.6%
All Turnkey & SW Companies	269.6	152.6	70.1	2,836	78.0%	67.1%	100.0%	30.4%

Source: Dataquest  
 April 1989



# Market Share

TABLE NUMBER: 28  
 TITLE: 1988 Market Share  
 APPLICATION: AEC  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Intergraph	9.5	5.7	1.9	104	19.0%	17.2%	19.7%	3.3%
Prime Computer	9.4	4.2	2.5	108	18.6%	12.7%	27.0%	3.4%
IBM	7.3	6.2	.6	615	14.6%	18.6%	6.2%	19.6%
Digital	6.1	5.0	.0	76	12.1%	15.2%	.0%	2.4%
McDonnell Douglas	1.9	1.4	.2	116	3.8%	4.1%	1.8%	3.7%
Olivetti	1.5	.7	.4	257	3.0%	2.1%	4.6%	8.2%
Autodesk	1.4	.0	1.4	0	2.7%	.0%	14.4%	.0%
Apollo	1.2	1.0	.0	51	2.3%	3.1%	.0%	1.6%
Hewlett-Packard	1.1	.8	.2	83	2.2%	2.4%	2.1%	2.6%
PAFEC	.8	.0	.8	0	1.5%	.0%	8.0%	.0%
Dassault	.7	.0	.6	0	1.5%	.0%	6.4%	.0%
Control Data	.5	.4	.1	2	1.0%	1.1%	.6%	.1%
Siemens	.4	.2	.1	7	.7%	.7%	1.2%	.2%
ISICAD	.2	.1	.1	2	.4%	.3%	.7%	.1%
Sun	.1	.1	.0	7	.3%	.4%	.0%	.2%
Robocom	.0	.0	.0	0	.1%	.0%	.4%	.0%
Cimlinc	.0	.0	.0	1	.1%	.0%	.1%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.1%	.0%
Other Companies	5.2	5.1	.1	1,194	10.4%	15.4%	.5%	38.1%
All Companies	50.3	33.1	9.4	3,134	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	46.9	32.2	7.5	2,871	93.3%	97.2%	79.4%	91.6%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	3.4	.9	1.9	264	6.7%	2.8%	20.6%	8.4%
All Hardware Companies	18.4	17.1	.0	2,456	36.6%	51.7%	.0%	78.4%
All Turnkey & SW Companies	31.9	16.0	9.4	678	63.4%	48.3%	100.0%	21.6%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 29  
 TITLE: 1988 Market Share  
 APPLICATION: Mapping  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
Intergraph	4.6	2.8	.9	51	26.2%	23.0%	31.4%	12.2%
Digital	4.0	3.4	.0	51	22.9%	28.0%	.0%	12.3%
IBM	3.6	2.6	.5	97	20.3%	21.9%	17.3%	23.4%
ICL	1.0	.8	.2	19	5.9%	6.5%	6.7%	4.6%
Prime Computer	.8	.3	.2	5	4.5%	2.6%	6.4%	1.2%
Siemens	.4	.2	.1	7	2.0%	1.8%	3.9%	1.6%
Autodesk	.3	.0	.3	0	1.6%	.0%	10.2%	.0%
McDonnell Douglas	.1	.1	.0	2	.8%	.8%	.4%	.6%
Sun	.1	.1	.0	5	.6%	.8%	.0%	1.3%
Apollo	.1	.1	.0	4	.5%	.7%	.0%	.9%
Synercom	.0	.0	.0	0	.2%	.0%	1.1%	.0%
Other Companies	1.4	1.3	.0	136	7.8%	11.2%	.0%	33.0%
All Companies	17.7	12.0	2.8	414	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	16.3	11.0	2.5	388	92.1%	91.7%	89.4%	93.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.4	1.0	.3	26	7.9%	8.3%	10.6%	6.2%
All Hardware Companies	6.1	5.3	.0	281	34.4%	44.3%	.0%	67.9%
All Turnkey & SW Companies	11.6	6.7	2.8	133	65.6%	55.7%	100.0%	32.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 30  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Mentor Graphics	13.9	7.1	5.1	212	11.8%	13.7%	11.4%	10.1%
Valid	13.7	7.2	4.0	117	11.6%	14.0%	8.9%	5.6%
Daisy Systems	10.0	4.3	3.5	178	8.5%	8.4%	7.8%	8.5%
Digital	8.1	6.7	.0	102	6.9%	12.9%	.0%	4.9%
Secmai	7.8	4.7	1.5	64	6.6%	9.0%	3.4%	3.1%
Racal-Redac	5.6	.5	4.6	11	4.8%	1.0%	10.3%	.5%
Assigraph	5.3	.0	2.1	31	4.5%	.0%	4.8%	1.5%
Prime Computer	4.9	2.2	1.4	40	4.2%	4.1%	3.1%	1.9%
Apollo	4.4	3.9	.0	195	3.8%	7.5%	.0%	9.3%
IBM	4.0	2.9	.5	136	3.4%	5.7%	1.1%	6.5%
Control Data	2.8	2.0	.4	20	2.4%	3.8%	.8%	.9%
Silvar-Lisco	2.3	.0	1.6	0	2.0%	.0%	3.5%	.0%
Scientific Calc.	2.2	.8	.7	7	1.8%	1.6%	1.6%	.3%
Thom 6	2.1	.0	1.9	0	1.8%	.0%	4.2%	.0%
Zycad	2.1	.1	1.8	0	1.8%	.1%	4.1%	.0%
Sun	2.0	1.8	.0	93	1.7%	3.4%	.0%	4.4%
Intergraph	1.7	1.0	.3	19	1.5%	2.0%	.7%	.9%
Hewlett-Packard	1.4	.9	.3	78	1.2%	1.8%	.6%	3.7%
XAO Industrie	1.3	.5	.7	72	1.1%	1.0%	1.6%	3.4%
CADAM	1.3	.0	1.2	0	1.1%	.0%	2.6%	.0%
DECAD	1.2	.3	.7	0	1.0%	.5%	1.5%	.0%
Autodesk	.6	.0	.6	0	.5%	.0%	1.2%	.0%
Calay	.4	.1	.2	4	.3%	.2%	.5%	.2%
European Silicon Structures	.3	.0	.3	0	.3%	.0%	.7%	.0%
Dassault	.2	.0	.2	0	.2%	.0%	.3%	.0%
Aucotec	.1	.0	.0	53	.1%	.0%	.1%	2.5%
Schlumberger (Applicon)	.1	.1	.0	3	.1%	.2%	.0%	.2%
Olivetti	.1	.0	.1	26	.1%	.1%	.1%	1.3%
Sycotronic AG	.0	.0	.0	0	.0%	.0%	.0%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.1%	.0%
RHV Software Systems	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 30 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Other Companies	21.3	8.4	7.4	546	18.1%	16.1%	16.5%	26.1%
All Companies	117.7	51.9	44.9	2,092	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	93.1	45.7	32.4	1,830	79.1%	88.2%	72.2%	87.5%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	24.6	6.1	12.5	261	20.9%	11.8%	27.8%	12.5%
All Hardware Companies	20.1	17.8	.0	1,102	17.1%	34.3%	.0%	52.7%
All Turnkey & SW Companies	97.6	34.1	44.9	990	82.9%	65.7%	100.0%	47.3%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 31  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Valid	11.3	6.0	3.3	109	17.9%	22.8%	12.6%	8.8%
Mentor Graphics	9.5	4.9	3.5	171	15.1%	18.6%	13.5%	13.9%
Daisy Systems	6.2	2.5	2.3	133	9.9%	9.4%	8.9%	10.8%
Digital	4.0	3.4	.0	51	6.4%	12.8%	.0%	4.1%
Assigraph	2.8	.0	1.2	16	4.4%	.0%	4.5%	1.3%
Apollo	2.7	2.4	.0	120	4.4%	9.2%	.0%	9.7%
Thom 6	2.1	.0	1.9	0	3.4%	.0%	7.3%	.0%
Zycad	2.1	.1	1.8	0	3.4%	.2%	7.0%	.0%
Control Data	1.6	1.1	.2	14	2.5%	4.1%	.8%	1.1%
Prime Computer	1.5	.7	.5	16	2.4%	2.5%	1.7%	1.3%
XAO Industrie	1.3	.3	.7	72	2.1%	2.1%	2.9%	5.8%
Sun	1.1	1.0	.0	51	1.7%	3.7%	.0%	4.1%
Silvar-Lisco	.9	.0	.6	0	1.5%	.0%	2.4%	.0%
Racal-Redac	.9	.1	.7	2	1.4%	.4%	2.8%	.2%
Secmai	.8	.5	.2	7	1.3%	1.9%	.6%	.6%
Hewlett-Packard	.6	.4	.1	41	1.0%	1.6%	.5%	3.3%
Autodesk	.4	.0	.4	0	.6%	.0%	1.5%	.0%
IBM	.3	.3	.0	55	.5%	1.3%	.0%	4.5%
Dassault	.2	.0	.2	0	.3%	.0%	.6%	.0%
Intergraph	.2	.1	.0	2	.3%	.4%	.1%	.2%
Aucotec	.1	.0	.0	53	.2%	.0%	.1%	4.3%
RNV Software Systems	.0	.0	.0	0	.0%	.0%	.1%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.1%	.0%

(Continued)

# Market Share

TABLE NUMBER: 31 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
Other Companies	8.6	2.4	4.0	321	13.7%	9.1%	15.6%	26.0%
All Companies	62.8	26.1	25.9	1,234	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	54.5	25.0	21.0	1,085	86.8%	95.7%	81.0%	87.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	8.3	1.1	4.9	149	13.2%	4.3%	19.0%	12.1%
All Hardware Companies	10.6	9.3	.0	576	16.8%	35.6%	.0%	46.6%
All Turnkey & SW Companies	52.2	16.8	25.9	658	83.2%	64.4%	100.0%	53.4%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 32  
 TITLE: 1988 Market Share  
 APPLICATION: IC Layout  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Silvar-Lisco	1.4	.0	1.0	0	12.1%	.0%	19.7%	.0%
Digital	1.2	1.0	.0	15	10.4%	22.9%	.0%	12.5%
Mentor Graphics	1.1	.6	.4	12	9.2%	12.6%	8.1%	9.5%
Valid	1.0	.5	.3	3	8.7%	12.2%	6.0%	2.3%
Apollo	1.0	.9	.0	43	8.4%	19.7%	.0%	34.8%
Assigraph	.9	.0	.2	5	7.4%	.0%	4.8%	4.1%
Control Data	.5	.4	.1	2	4.4%	8.3%	1.2%	1.7%
Sun	.5	.4	.0	22	4.0%	9.4%	.0%	17.7%
Daisy Systems	.4	.1	.1	4	3.0%	3.2%	2.9%	3.6%
European Silicon Structures	.3	.0	.3	0	2.7%	.0%	6.4%	.0%
Intergraph	.2	.1	.0	2	1.7%	3.0%	.6%	1.8%
Hewlett-Packard	.1	.0	.0	3	.5%	.9%	.2%	2.3%
Other Companies	1.5	.3	.5	14	12.8%	6.9%	11.2%	11.8%
All Companies	11.6	4.4	4.8	122	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	10.4	4.4	4.3	117	89.9%	100.0%	88.8%	95.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.2	.0	.5	5	10.1%	.0%	11.2%	4.1%
All Hardware Companies	3.1	2.7	.0	92	26.6%	61.5%	.0%	75.0%
All Turnkey & SW Companies	8.5	1.7	4.8	31	73.4%	38.5%	100.0%	25.0%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 33  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Secmai	7.0	4.2	1.4	58	16.1%	19.6%	9.8%	7.8%
Racal-Redac	4.7	.4	3.9	9	10.9%	2.0%	27.6%	1.2%
IBM	3.6	2.6	.5	81	8.4%	12.2%	3.6%	11.1%
Prime Computer	3.4	1.5	1.0	24	7.8%	7.0%	6.7%	3.2%
Daisy Systems	3.4	1.7	1.1	41	7.8%	8.1%	7.7%	5.6%
Mentor Graphics	3.3	1.7	1.2	29	7.7%	8.0%	8.7%	4.0%
Digital	2.8	2.3	.0	36	6.5%	10.9%	.0%	4.8%
Scientific Calc.	2.2	.8	.7	7	5.0%	3.9%	5.0%	1.0%
Assigraph	1.7	.0	.7	10	4.0%	.0%	5.3%	1.3%
Valid	1.4	.7	.4	6	3.2%	3.5%	2.9%	.8%
Intergraph	1.3	.8	.3	15	3.1%	3.7%	1.8%	2.0%
CADAM	1.3	.0	1.2	0	3.0%	.0%	8.3%	.0%
DECAD	1.2	.3	.7	0	2.7%	1.2%	4.8%	.0%
Control Data	.8	.5	.1	4	1.8%	2.5%	.8%	.5%
Hewlett-Packard	.8	.5	.2	35	1.7%	2.2%	1.1%	4.7%
Apollo	.7	.6	.0	32	1.7%	3.0%	.0%	4.4%
Sun	.4	.4	.0	20	1.0%	1.8%	.0%	2.7%
Calay	.4	.1	.2	4	.8%	.4%	1.5%	.6%
Autodesk	.2	.0	.2	0	.4%	.0%	1.3%	.0%
Schlumberger (Applicon)	.1	.1	.0	3	.3%	.4%	.1%	.5%
Olivetti	.1	.0	.1	26	.3%	.2%	.4%	3.6%
Sycotronic AG	.0	.0	.0	0	.1%	.0%	.1%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.1%	.0%

(Continued)



# Market Share

TABLE NUMBER: 33 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: France  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Other Companies	11.2	5.7	2.8	211	25.8%	26.6%	20.1%	28.6%
All Companies	43.4	21.4	14.1	735	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	28.2	16.4	7.1	628	65.1%	76.6%	50.4%	85.5%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	15.1	5.0	7.0	107	34.9%	23.4%	49.6%	14.5%
All Hardware Companies	6.5	5.8	.0	435	15.0%	27.1%	.0%	59.1%
All Turnkey & SW Companies	36.9	15.6	14.1	301	85.0%	72.9%	100.0%	40.9%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 34  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****
IBM	176.1	129.3	23.4	4,974	14.9%	18.0%	8.0%	12.6%
Siemens	94.0	56.4	28.2	2,006	7.9%	7.8%	9.6%	5.1%
Prime Computer	89.3	40.7	23.8	817	7.5%	5.7%	8.1%	2.1%
Hewlett-Packard	70.9	45.6	15.0	3,509	6.0%	6.3%	5.1%	8.9%
Intergraph	70.5	42.3	13.6	772	6.0%	5.9%	4.6%	2.0%
Digital	68.1	56.5	.0	858	5.8%	7.9%	.0%	2.2%
Control Data	49.1	34.0	6.4	286	4.1%	4.7%	2.2%	.7%
Schlumberger (Applicon)	33.3	20.3	3.3	336	2.8%	2.8%	1.1%	.8%
Apollo	31.2	27.4	.0	1,365	2.6%	3.8%	.0%	3.4%
Norsk Data	28.9	14.2	8.7	16	2.4%	2.0%	3.0%	.0%
McDonnell Douglas	25.4	17.6	2.5	339	2.1%	2.4%	.8%	.9%
Mentor Graphics	23.8	12.2	8.8	151	2.0%	1.7%	3.0%	.4%
Daisy Systems	21.7	9.5	7.7	99	1.8%	1.3%	2.6%	.3%
Racal-Redac	19.7	1.8	16.2	38	1.7%	.3%	5.5%	.1%
Matra Datavision	19.1	10.5	5.7	56	1.6%	1.5%	2.0%	.1%
Valid	19.0	10.1	5.5	164	1.6%	1.4%	1.9%	.4%
Rotring euroCAD	15.5	6.8	7.1	194	1.3%	.9%	2.4%	.5%
STI-Strassle	15.4	12.3	3.1	25	1.3%	1.7%	1.0%	.1%
Sun	12.9	11.6	.0	615	1.1%	1.6%	.0%	1.6%
Ziegler Instruments GmbH	12.2	.0	11.6	0	1.0%	.0%	4.0%	.0%
ISICAD	11.4	5.7	3.8	117	1.0%	.8%	1.3%	.3%
Dassault	10.7	.0	8.7	0	.9%	.0%	3.0%	.0%
Exapt	9.6	6.6	2.1	150	.8%	.9%	.7%	.4%
Cade	8.0	1.6	4.2	23	.7%	.2%	1.4%	.1%
Logotec	7.9	4.8	2.4	47	.7%	.7%	.8%	.1%
ISYKON Software	7.4	2.9	3.1	1	.6%	.4%	1.1%	.0%
Calay	7.1	1.8	4.3	85	.6%	.2%	1.5%	.2%
Autodesk	6.1	.0	6.1	0	.5%	.0%	2.1%	.0%
Cimatron	5.6	2.6	2.5	73	.5%	.4%	.8%	.2%
Cimlinc	5.1	2.0	2.5	263	.4%	.3%	.8%	.7%
PAFEC	4.8	.0	4.8	0	.4%	.0%	1.6%	.0%
RHV Software Systems	4.8	.0	4.8	0	.4%	.0%	1.6%	.0%
Albert Nestler	4.6	2.2	1.6	117	.4%	.3%	.6%	.3%

(Continued)

# Market Share

TABLE NUMBER: 34  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Aucotec	4.4	2.0	2.2	12	.4%	.3%	.8%	.0%
Ferranti	4.4	3.4	.4	38	.4%	.5%	.1%	.1%
Technische Computer Systeme	4.1	3.3	.8	40	.3%	.5%	.3%	.1%
Scientific Calc.	3.8	1.4	1.2	11	.3%	.2%	.4%	.0%
Cisigraph	3.2	1.6	1.4	4	.3%	.2%	.5%	.0%
Cadtronic	2.8	1.8	.8	36	.2%	.2%	.3%	.1%
SDRC	2.8	.0	2.8	0	.2%	.0%	1.0%	.0%
Zycad	2.6	2.2	.1	0	.2%	.3%	.0%	.0%
Philips International	2.5	.0	2.1	0	.2%	.0%	.7%	.0%
Intercad	2.5	1.2	.8	133	.2%	.2%	.3%	.3%
Westward	2.1	.4	.0	842	.2%	.1%	.0%	2.1%
JCL	2.1	1.6	.4	38	.2%	.2%	.1%	.1%
MacNeal-Schwendler	2.0	.0	1.9	0	.2%	.0%	.6%	.0%
Olivetti	2.0	.8	.8	379	.2%	.1%	.3%	1.0%
Silvar-Lisco	1.8	.0	1.2	0	.1%	.0%	.4%	.0%
CADAM	1.3	.0	1.2	0	.1%	.0%	.4%	.0%
Sycotronic AG	1.1	.0	.9	0	.1%	.0%	.3%	.0%
Unisys	1.0	.6	.3	39	.1%	.1%	.1%	.1%
European Silicon Structures	1.0	.0	1.0	0	.1%	.0%	.3%	.0%
Assigraph	.9	.0	.3	4	.1%	.0%	.1%	.0%
Sysscan	.9	.5	.4	35	.1%	.1%	.1%	.1%
Secmai	.6	.4	.1	5	.0%	.0%	.0%	.0%
Superdraft	.4	.0	.4	0	.0%	.0%	.1%	.0%
Synercom	.4	.0	.3	0	.0%	.0%	.1%	.0%
Robocom	.3	.0	.3	0	.0%	.0%	.1%	.0%
CAD-UL	.2	.1	.1	5	.0%	.0%	.0%	.0%
Thom 6	.1	.0	.1	0	.0%	.0%	.0%	.0%
Vision 3D	.1	.1	.0	2	.0%	.0%	.0%	.0%
Gerber Systems	.1	.1	.0	2	.0%	.0%	.0%	.0%
Plessey Semiconductors	.1	.0	.1	0	.0%	.0%	.0%	.0%
Catalpe	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 34 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company *****					***** Market Share *****			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
Other Companies	144.9	94.1	42.4	13,306	12.3%	13.1%	14.5%	33.6%
All Companies	1,182.8	719.3	293.6	39,590	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 874.6	 579.6	 162.1	 35,225	 73.9%	 80.6%	 55.2%	 89.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	308.2	139.7	131.4	4,366	26.1%	19.4%	44.8%	11.0%
All Hardware Companies	250.9	235.2	.0	28,089	21.2%	32.7%	.0%	70.9%
All Turnkey & SW Companies	931.9	484.1	293.6	11,501	78.8%	67.3%	100.0%	29.1%

Source: Dataquest  
April 1989

# Market Share

TABLE NUMBER: 35  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Siemens	87.6	52.6	26.3	1,952	15.4%	16.7%	16.6%	20.3%
Hewlett-Packard	60.1	34.8	15.0	1,392	10.6%	11.1%	9.5%	14.5%
Prime Computer	55.1	25.6	13.4	607	9.7%	8.1%	8.5%	6.3%
Intergraph	45.8	27.0	9.2	341	8.1%	8.6%	5.8%	3.5%
Apollo	28.1	24.7	.0	1,244	4.9%	7.8%	.0%	13.0%
Mentor Graphics	23.8	12.2	8.8	151	4.2%	3.9%	5.6%	1.6%
Digital	23.8	19.8	.0	858	4.2%	6.3%	.0%	8.9%
Schlumberger (Applicon)	22.6	13.8	2.3	307	4.0%	4.4%	1.4%	3.2%
Daisy Systems	20.3	8.7	7.1	98	3.6%	2.8%	4.5%	1.0%
Valid	18.3	9.7	5.3	153	3.2%	3.1%	3.3%	1.6%
Control Data	12.9	8.6	2.2	210	2.3%	2.7%	1.4%	2.2%
Racal-Redac	12.8	1.8	9.3	38	2.3%	.6%	5.9%	.4%
STI-Strassle	11.9	9.5	2.4	15	2.1%	3.0%	1.5%	.2%
Norsk Data	11.6	5.8	3.5	7	2.0%	1.8%	2.2%	.1%
Sun	11.0	9.9	.0	553	1.9%	3.1%	.0%	5.8%
ISICAD	10.3	5.7	2.7	117	1.8%	1.8%	1.7%	1.2%
McDonnell Douglas	8.2	5.1	1.4	141	1.4%	1.6%	.9%	1.5%
Cade	8.0	1.6	4.2	23	1.4%	.5%	2.6%	.2%
IBM	7.8	5.7	.9	166	1.4%	1.8%	.6%	1.7%
Rotring euroCAD	7.8	3.4	3.6	58	1.4%	1.1%	2.3%	.6%
Calay	7.1	1.8	4.3	85	1.3%	.6%	2.7%	.9%
Cimatron	5.0	2.3	2.2	65	.9%	.7%	1.4%	.7%
ISYKON Software	4.9	2.0	2.1	1	.9%	.6%	1.3%	.0%
Cimlinc	4.9	1.8	2.5	246	.9%	.6%	1.6%	2.6%
Albert Nestler	4.2	2.0	1.5	89	.7%	.6%	1.0%	.9%
PAFEC	4.1	.0	4.1	0	.7%	.0%	2.6%	.0%
Technische Computer Systeme	4.1	3.3	.8	40	.7%	1.0%	.5%	.4%
Exapt	2.9	1.6	1.0	48	.5%	.5%	.6%	.5%
Scientific Calc.	2.5	1.2	.5	11	.4%	.4%	.3%	.1%
Dassault	2.1	.0	1.7	0	.4%	.0%	1.1%	.0%
ICL	2.1	1.6	.4	38	.4%	.5%	.2%	.4%
SDRC	1.9	.0	1.9	0	.3%	.0%	1.2%	.0%

(Continued)

# Market Share

TABLE NUMBER: 35 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Silvar-Lisco	1.4	.0	1.0	0	.3%	.0%	.6%	.0%
Cisigraph	1.0	.5	.4	1	.2%	.2%	.3%	.0%
European Silicon Structures	.8	.0	.8	0	.1%	.0%	.5%	.0%
Unisys	.8	.4	.2	32	.1%	.1%	.1%	.3%
Secmai	.6	.3	.1	5	.1%	.1%	.1%	.0%
Assigraph	.4	.0	.1	2	.1%	.0%	.1%	.0%
Autodesk	.3	.0	.3	0	.1%	.0%	.2%	.0%
Aucotec	.2	.2	.1	1	.0%	.1%	.1%	.0%
MacNeal-Schwendler	.2	.0	.2	0	.0%	.0%	.1%	.0%
Thom 6	.1	.0	.1	0	.0%	.0%	.0%	.0%
Gerber Systems	.1	.1	.0	2	.0%	.0%	.0%	.0%
Ferranti	.1	.1	.0	2	.0%	.0%	.0%	.0%
Plessey Semiconductors	.1	.0	.1	0	.0%	.0%	.0%	.0%
Zycad	.0	.0	.0	0	.0%	.0%	.0%	.0%
Catalpa	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	34.6	16.0	13.3	400	6.1%	5.1%	8.4%	4.2%
All Companies	567.7	314.8	158.1	9,598	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	388.4	224.6	89.2	7,128	68.4%	71.4%	56.4%	74.3%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	179.3	90.2	68.9	2,470	31.6%	28.6%	43.6%	25.7%
All Hardware Companies	70.7	61.3	.0	3,006	12.5%	19.5%	.0%	31.3%
All Turnkey & SW Companies	497.0	253.5	158.1	6,592	87.5%	80.5%	100.0%	68.7%

Source: Dataquest  
April 1989

# Market Share

TABLE NUMBER: 36  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	147.6	103.3	22.1	1,576	34.4%	36.1%	29.6%	39.3%
Digital	44.3	36.7	.0	0	10.3%	12.8%	.0%	.0%
Control Data	36.2	25.4	4.2	77	8.4%	8.9%	5.5%	1.9%
Prime Computer	31.1	14.7	8.0	181	7.2%	5.1%	10.7%	4.5%
Intergraph	23.4	15.2	3.3	432	5.5%	5.3%	4.4%	10.8%
Matra Datavision	19.1	10.5	5.7	56	4.4%	3.7%	7.7%	1.4%
McDonnell Douglas	17.2	12.5	1.1	199	4.0%	4.3%	1.5%	5.0%
Norsk Data	16.8	8.4	5.0	8	3.9%	2.9%	6.7%	.2%
Schlumberger (Applicon)	10.7	6.5	1.1	29	2.5%	2.3%	1.4%	.7%
Dassault	8.5	.0	7.0	0	2.0%	.0%	9.3%	.0%
Exapt	6.7	5.0	1.1	102	1.6%	1.7%	1.5%	2.5%
Siemens	6.4	3.8	1.9	54	1.5%	1.3%	2.6%	1.3%
Ferranti	4.3	3.3	.3	37	1.0%	1.2%	.4%	.9%
STI-Strassle	3.6	2.9	.7	9	.8%	1.0%	.9%	.2%
Apollo	3.1	2.7	.0	122	.7%	.9%	.0%	3.0%
Zycad	2.5	2.2	.1	0	.6%	.8%	.1%	.0%
ISYKON Software	2.4	1.0	1.0	0	.6%	.3%	1.4%	.0%
Cisigraph	2.2	1.1	.9	3	.5%	.4%	1.3%	.1%
Sun	2.0	1.7	.0	62	.5%	.6%	.0%	1.5%
MacNeal-Schwendler	1.8	.0	1.7	0	.4%	.0%	2.2%	.0%
Westward	1.7	.1	.0	204	.4%	.0%	.0%	5.1%
Scientific Calc.	1.3	.2	.7	0	.3%	.1%	.9%	.0%
Daisy Systems	1.1	.7	.3	1	.3%	.2%	.4%	.0%
SDRC	.9	.0	.9	0	.2%	.0%	1.2%	.0%
Syscan	.9	.5	.4	35	.2%	.2%	.5%	.9%
PAFEC	.7	.0	.7	0	.2%	.0%	1.0%	.0%
Assigraph	.5	.0	.2	2	.1%	.0%	.2%	.1%
Synercom	.4	.0	.3	0	.1%	.0%	.5%	.0%
Silvar-Lisco	.3	.0	.2	0	.1%	.0%	.3%	.0%
Cimline	.3	.3	.0	16	.1%	.1%	.0%	.4%
Unisys	.3	.1	.1	7	.1%	.0%	.1%	.2%
Aucotec	.2	.2	.1	1	.1%	.1%	.1%	.0%

(Continued)

# Market Share

TABLE NUMBER: 36 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
Olivetti	.1	.1	.0	8	.0%	.0%	.1%	.2%
Plessey Semiconductors	.0	.0	.0	0	.0%	.0%	.0%	.0%
Thom 6	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	35.4	33.3	2.4	1,040	8.2%	11.6%	3.2%	25.9%
All Companies	429.7	286.5	74.8	4,010	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	355.5	249.8	49.6	3,492	82.7%	87.2%	66.3%	87.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	74.2	36.7	25.2	518	17.3%	12.8%	33.7%	12.9%
All Hardware Companies	81.6	75.4	.0	915	19.0%	26.3%	.0%	22.8%
All Turnkey & SW Companies	348.1	211.1	74.8	3,095	81.0%	73.7%	100.0%	77.2%

Source: Dataquest  
 April 1989



# Market Share

TABLE NUMBER: 37  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	20.8	20.3	.3	3,232	11.2%	17.2%	.5%	12.4%
Ziegler Instruments GmbH	12.2	.0	11.6	0	6.6%	.0%	19.1%	.0%
Hewlett-Packard	10.8	10.8	.0	2,118	5.8%	9.1%	.0%	8.2%
Logotec	7.9	4.8	2.4	47	4.3%	4.0%	3.9%	.2%
Rotring euroCAD	7.8	3.4	3.6	136	4.2%	2.9%	5.9%	.5%
Racal-Redac	6.9	.0	6.9	0	3.7%	.0%	11.3%	.0%
Autodesk	5.8	.0	5.8	0	3.1%	.0%	9.5%	.0%
RHV Software Systems	4.8	.0	4.8	0	2.6%	.0%	7.9%	.0%
Aucotec	4.0	1.6	2.0	11	2.2%	1.4%	3.3%	.0%
Prime Computer	3.2	.5	2.3	28	1.7%	.4%	3.8%	.1%
Cadtronic	2.8	1.8	.8	36	1.5%	1.5%	1.3%	.1%
Philips International	2.5	.0	2.1	0	1.3%	.0%	3.5%	.0%
Intercad	2.5	1.2	.8	133	1.3%	1.0%	1.2%	.5%
Olivetti	1.9	.8	.8	372	1.0%	.7%	1.3%	1.4%
CADAM	1.3	.0	1.2	0	.7%	.0%	2.0%	.0%
Intergraph	1.3	.0	1.2	0	.7%	.0%	1.9%	.0%
ISICAD	1.2	.0	1.2	0	.6%	.0%	1.9%	.0%
Sycotronic AG	1.1	.0	.9	0	.6%	.0%	1.5%	.0%
Valid	.8	.4	.2	11	.4%	.3%	.4%	.0%
Norsk Data	.6	.0	.2	1	.3%	.0%	.3%	.0%
Cimatron	.6	.3	.2	7	.3%	.2%	.4%	.0%
Superdraft	.4	.0	.4	0	.2%	.0%	.6%	.0%
Westward	.4	.3	.0	638	.2%	.3%	.0%	2.5%
Albert Nestler	.4	.2	.1	28	.2%	.2%	.2%	.1%
Robocom	.3	.0	.3	0	.2%	.0%	.5%	.0%
Daisy Systems	.3	.1	.3	0	.2%	.1%	.5%	.0%
European Silicon Structures	.2	.0	.2	0	.1%	.0%	.3%	.0%
CAD-UL	.2	.1	.1	5	.1%	.1%	.2%	.0%
Vision 3D	.1	.1	.0	2	.1%	.1%	.0%	.0%
MacNeal-Schwendler	.0	.0	.0	0	.0%	.0%	.1%	.0%
Secmai	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 37 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
Other Companies	74.9	44.8	26.7	11,866	40.4%	38.0%	44.0%	45.7%
All Companies	185.4	118.0	60.6	25,983	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 130.7	 105.2	 23.3	 24,605	 70.5%	 89.1%	 38.5%	 94.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	54.7	12.8	37.3	1,378	29.5%	10.9%	61.5%	5.3%
All Hardware Companies	98.5	98.5	.0	24,168	53.1%	83.5%	.0%	93.0%
All Turnkey & SW Companies	86.9	19.5	60.6	1,814	46.9%	16.5%	100.0%	7.0%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 38  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	152.8	110.8	21.0	3,629	20.6%	23.5%	12.9%	14.9%
Prime Computer	70.9	32.2	18.9	629	9.6%	6.8%	11.6%	2.6%
Siemens	68.7	41.2	20.6	1,512	9.3%	8.7%	12.7%	6.2%
Hewlett-Packard	43.8	27.6	9.7	1,838	5.9%	5.8%	5.9%	7.5%
Control Data	42.7	29.6	5.6	236	5.7%	6.3%	3.4%	1.0%
Digital	37.4	31.1	.0	472	5.0%	6.6%	.0%	1.9%
Schlumberger (Applicon)	32.8	20.0	3.3	334	4.4%	4.2%	2.0%	1.4%
Norsk Data	28.9	14.2	8.7	16	3.9%	3.0%	5.3%	.1%
Intergraph	21.2	12.7	4.1	232	2.9%	2.7%	2.5%	1.0%
Matra Datavision	19.1	10.5	5.7	56	2.6%	2.2%	3.5%	.2%
McDonnell Douglas	17.7	12.2	1.8	294	2.4%	2.6%	1.1%	1.2%
Apollo	12.2	10.7	.0	534	1.6%	2.3%	.0%	2.2%
STI-Strassle	10.8	8.6	2.2	14	1.5%	1.8%	1.3%	.1%
Exapt	9.6	6.6	2.1	150	1.3%	1.4%	1.3%	.6%
Rotring euroCAD	9.3	4.1	4.3	116	1.3%	.9%	2.6%	.5%
ISICAD	9.1	4.6	3.0	93	1.2%	1.0%	1.9%	.4%
Dassault	9.1	.0	7.4	0	1.2%	.0%	4.6%	.0%
ISYKON Software	7.4	2.9	3.1	1	1.0%	.6%	1.9%	.0%
Logotec	5.9	3.6	1.8	35	.8%	.8%	1.1%	.1%
Cimatron	5.6	2.6	2.5	73	.8%	.5%	1.5%	.3%
Sun	5.5	5.0	.0	262	.7%	1.0%	.0%	1.1%
Cimlinc	5.0	2.0	2.4	255	.7%	.4%	1.5%	1.0%
Albert Nestler	4.6	2.2	1.6	117	.6%	.5%	1.0%	.5%
Ferranti	4.4	3.4	.4	38	.6%	.7%	.2%	.2%
RNV Software Systems	4.0	.0	4.0	0	.5%	.0%	2.4%	.0%
PAFEC	3.9	.0	3.9	0	.5%	.0%	2.4%	.0%
Ziegler Instruments GmbH	3.7	.0	3.5	0	.5%	.0%	2.1%	.0%
Cisigraph	3.2	1.6	1.4	4	.4%	.3%	.8%	.0%
Autodesk	3.1	.0	3.1	0	.4%	.0%	1.9%	.0%
SDRC	2.8	.0	2.8	0	.4%	.0%	1.7%	.0%
Philips International	2.5	.0	2.1	0	.3%	.0%	1.3%	.0%
MacNeal-Schwendler	2.0	.0	1.9	0	.3%	.0%	1.2%	.0%

(Continued)

# Market Share

TABLE NUMBER: 38 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Westward	2.0	.4	.0	800	.3%	.1%	.0%	3.3%
Intercad	1.2	.6	.4	64	.2%	.1%	.2%	.3%
ICL	1.0	.8	.2	19	.1%	.2%	.1%	.1%
Olivetti	1.0	.4	.5	183	.1%	.1%	.3%	.8%
Unisys	1.0	.6	.3	39	.1%	.1%	.2%	.2%
Superdraft	.4	.0	.4	0	.1%	.0%	.2%	.0%
Cadtronic	.3	.2	.1	4	.0%	.0%	.0%	.0%
Robocom	.1	.0	.1	0	.0%	.0%	.1%	.0%
Vision 3D	.1	.1	.0	2	.0%	.0%	.0%	.0%
Gerber Systems	.1	.1	.0	2	.0%	.0%	.0%	.0%
Catalpa	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	84.3	59.6	21.6	7,938	11.4%	12.6%	13.3%	32.6%
All Companies	742.5	472.2	162.6	24,379	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	536.0	368.5	86.0	21,179	72.2%	78.0%	52.9%	86.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	206.5	103.7	76.6	3,200	27.8%	22.0%	47.1%	13.1%
All Hardware Companies	144.0	137.3	.0	16,306	19.4%	29.1%	.0%	66.9%
All Turnkey & SW Companies	598.4	334.8	162.6	8,073	80.6%	70.9%	100.0%	33.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 39  
 TITLE: 1988 Market Share  
 APPLICATION: AEC  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Intergraph	29.6	17.8	5.7	324	23.3%	21.1%	23.3%	4.7%
IBM	12.5	10.4	1.1	984	9.9%	12.4%	4.3%	14.1%
Prime Computer	12.1	5.6	3.1	137	9.5%	6.7%	12.7%	2.0%
Siemens	10.6	6.3	3.2	200	8.3%	7.5%	12.9%	2.9%
Digital	10.2	8.5	.0	129	8.0%	10.1%	.0%	1.8%
Hewlett-Packard	10.1	7.1	1.8	743	8.0%	8.4%	7.3%	10.6%
McDonnell Douglas	7.2	5.1	.6	36	5.7%	6.0%	2.6%	.5%
Apollo	3.7	3.2	.0	162	2.9%	3.8%	.0%	2.3%
ISICAD	2.4	1.2	.8	24	1.9%	1.4%	3.2%	.3%
Autodesk	2.1	.0	2.1	0	1.6%	.0%	8.4%	.0%
Cadtronic	1.7	1.1	.5	22	1.3%	1.3%	1.9%	.3%
Ziegler Instruments GmbH	1.6	.0	1.5	0	1.3%	.0%	6.1%	.0%
Dassault	1.3	.0	1.1	0	1.0%	.0%	4.3%	.0%
Control Data	1.0	.7	.1	5	.8%	.8%	.5%	.1%
PAFEC	.9	.0	.9	0	.7%	.0%	3.8%	.0%
Olivetti	.6	.3	.2	128	.5%	.4%	.9%	1.8%
Sun	.5	.4	.0	22	.4%	.5%	.0%	.3%
Cimlinc	.2	.1	.1	8	.1%	.1%	.3%	.1%
RHV Software Systems	.1	.0	.1	0	.1%	.0%	.6%	.0%
Robocom	.1	.0	.1	0	.1%	.0%	.5%	.0%
Westward	.1	.0	.0	42	.1%	.0%	.0%	.6%
Other Companies	14.9	12.2	2.2	2,854	11.8%	14.6%	9.1%	40.9%
All Companies	127.0	84.0	24.6	6,976	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	111.6	77.4	17.4	6,606	87.9%	92.1%	70.9%	94.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	15.4	6.7	7.2	370	12.1%	7.9%	29.1%	5.3%
All Hardware Companies	38.8	36.4	.0	5,734	30.6%	43.3%	.0%	82.2%
All Turnkey & SW Companies	88.2	47.6	24.6	1,242	69.4%	56.7%	100.0%	17.8%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 40  
 TITLE: 1988 Market Share  
 APPLICATION: Mapping  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Intergraph	14.4	8.6	2.8	157	25.9%	24.7%	20.9%	13.1%
Siemens	10.6	6.3	3.2	200	19.0%	18.1%	23.9%	16.6%
Digital	6.8	5.7	.0	86	12.3%	16.2%	.0%	7.1%
IBM	5.1	3.8	.7	150	9.2%	10.8%	5.1%	12.4%
STI-Strassle	4.6	3.7	.9	11	8.3%	10.6%	6.9%	.9%
ICL	1.0	.8	.2	19	1.9%	2.2%	1.4%	1.6%
Prime Computer	1.0	.6	.2	9	1.8%	1.6%	1.7%	.7%
Sysscan	.9	.5	.4	35	1.6%	1.5%	2.6%	2.9%
Ziegler Instruments GmbH	.9	.0	.8	0	1.6%	.0%	6.1%	.0%
Cadtronic	.9	.5	.2	11	1.5%	1.5%	1.7%	.9%
McDonnell Douglas	.5	.4	.0	9	.9%	1.1%	.2%	.7%
Sycotronic AG	.4	.0	.4	0	.8%	.0%	2.7%	.0%
Synercom	.4	.0	.3	0	.8%	.0%	2.6%	.0%
Sun	.4	.3	.0	17	.6%	.9%	.0%	1.4%
Apollo	.3	.3	.0	13	.6%	.8%	.0%	1.1%
Autodesk	.3	.0	.3	0	.5%	.0%	2.2%	.0%
Olivetti	.2	.1	.1	48	.4%	.3%	.8%	4.0%
RHV Software Systems	.1	.0	.1	0	.3%	.0%	1.1%	.0%
Robocom	.0	.0	.0	0	.0%	.0%	.1%	.0%
Other Companies	4.4	2.6	1.6	341	8.0%	7.4%	11.7%	28.3%
All Companies	55.5	34.9	13.3	1,206	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	36.7	23.4	7.2	894	66.2%	67.2%	54.3%	74.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	18.8	11.4	6.1	312	33.8%	32.8%	45.7%	25.9%
All Hardware Companies	10.5	9.1	.0	622	18.8%	26.2%	.0%	51.5%
All Turnkey & SW Companies	45.0	25.7	13.3	585	81.2%	73.8%	100.0%	48.5%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 41  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Mentor Graphics	23.8	12.2	8.8	151	9.2%	9.5%	9.5%	2.2%
Daisy Systems	21.7	9.5	7.7	99	8.4%	7.4%	8.3%	1.4%
Racal-Redac	19.7	1.8	16.2	38	7.6%	1.4%	17.4%	.5%
Valid	19.0	10.1	5.5	164	7.4%	7.9%	5.9%	2.3%
Hewlett-Packard	17.0	11.0	3.6	928	6.6%	8.6%	3.8%	13.2%
Apollo	15.0	13.2	.0	657	5.8%	10.3%	.0%	9.3%
Digital	13.6	11.3	.0	172	5.3%	8.8%	.0%	2.4%
Cade	8.0	1.6	4.2	23	3.1%	1.2%	4.5%	.3%
Calay	7.1	1.8	4.3	85	2.8%	1.4%	4.6%	1.2%
Sun	6.6	5.9	.0	315	2.6%	4.6%	.0%	4.5%
Rotring euroCAD	6.2	2.7	2.9	78	2.4%	2.1%	3.1%	1.1%
Ziegler Instruments GmbH	6.1	.0	5.8	0	2.4%	.0%	6.2%	.0%
IBM	5.7	4.3	.7	211	2.2%	3.3%	.8%	3.0%
Control Data	5.4	3.7	.7	45	2.1%	2.9%	.7%	.6%
Intergraph	5.4	3.2	1.1	59	2.1%	2.5%	1.1%	.8%
Prime Computer	5.3	2.3	1.5	42	2.0%	1.8%	1.6%	.6%
Aucotec	4.4	2.0	2.2	12	1.7%	1.5%	2.4%	.2%
Siemens	4.2	2.5	1.3	94	1.6%	2.0%	1.4%	1.3%
Technische Computer Systeme	4.1	3.3	.8	40	1.6%	2.5%	.9%	.6%
Scientific Calc.	3.8	1.4	1.2	11	1.5%	1.1%	1.3%	.2%
Zycad	2.6	2.2	.1	0	1.0%	1.7%	.1%	.0%
Logotec	2.0	1.2	.6	12	.8%	.9%	.6%	.2%
Silvar-Lisco	1.8	.0	1.2	0	.7%	.0%	1.3%	.0%
CADAM	1.3	.0	1.2	0	.5%	.0%	1.3%	.0%
Intercad	1.3	.6	.4	69	.5%	.5%	.4%	1.0%
European Silicon Structures	1.0	.0	1.0	0	.4%	.0%	1.0%	.0%
Assigraph	.9	.0	.3	4	.3%	.0%	.3%	.1%
Sycotronic AG	.7	.0	.6	0	.3%	.0%	.6%	.0%
Autodesk	.7	.0	.7	0	.3%	.0%	.7%	.0%
Secmai	.6	.4	.1	5	.2%	.3%	.1%	.1%
RHV Software Systems	.5	.0	.5	0	.2%	.0%	.6%	.0%
Schlumberger (Applicon)	.5	.3	.0	1	.2%	.2%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 41 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Dassault	.3	.0	.3	0	.1%	.0%	.3%	.0%
CAD-UL	.2	.1	.1	5	.1%	.0%	.1%	.1%
Thom 6	.1	.0	.1	0	.1%	.0%	.1%	.0%
Olivetti	.1	.0	.0	20	.0%	.0%	.0%	.3%
Plessey Semiconductors	.1	.0	.1	0	.0%	.0%	.1%	.0%
Robocom	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	41.3	19.7	17.1	2,173	16.0%	15.4%	18.3%	30.9%
All Companies	257.9	128.3	93.1	7,030	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	190.3	110.3	51.5	6,546	73.8%	86.0%	55.3%	93.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	67.6	18.0	41.6	484	26.2%	14.0%	44.7%	6.9%
All Hardware Companies	57.6	52.3	.0	5,428	22.3%	40.8%	.0%	77.2%
All Turnkey & SW Companies	200.3	75.9	93.1	1,602	77.7%	59.2%	100.0%	22.8%

Source: Dataquest  
 April 1989



# Market Share

TABLE NUMBER: 42  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Mentor Graphics	15.8	8.1	5.8	92	12.1%	11.9%	13.0%	2.8%
Valid	15.7	8.3	4.5	152	12.0%	12.3%	10.1%	4.6%
Daisy Systems	13.7	5.4	5.1	57	10.5%	8.0%	11.3%	1.7%
Apollo	9.3	8.2	.0	408	7.1%	12.1%	.0%	12.4%
Hewlett-Packard	7.6	5.0	1.5	497	5.8%	7.4%	3.4%	15.1%
Digital	6.8	5.7	.0	86	5.2%	8.4%	.0%	2.6%
Rotring euroCAD	6.2	2.7	2.9	78	4.8%	4.0%	6.4%	2.4%
Aucotec	4.4	2.0	2.2	12	3.4%	2.9%	4.9%	.4%
Technische Computer Systeme	4.1	3.3	.8	40	3.1%	4.8%	1.8%	1.2%
Ziegler Instruments GmbH	3.7	.0	3.5	0	2.8%	.0%	7.7%	.0%
Sun	3.6	3.2	.0	170	2.7%	4.8%	.0%	5.2%
Racal-Redac	3.5	.4	2.8	8	2.7%	.5%	6.3%	.2%
Control Data	3.0	2.0	.4	32	2.3%	3.0%	.8%	1.0%
Zycad	2.6	2.2	.1	0	2.0%	3.2%	.2%	.0%
Logotec	2.0	1.2	.6	12	1.5%	1.8%	1.3%	.4%
Prime Computer	1.4	.6	.4	15	1.1%	.9%	.9%	.5%
Silvar-Lisco	.7	.0	.5	0	.5%	.0%	1.1%	.0%
Intergraph	.6	.3	.1	6	.4%	.5%	.3%	.2%
IBM	.6	.6	.0	91	.4%	.8%	.0%	2.8%
RHV Software Systems	.5	.0	.5	0	.4%	.0%	1.2%	.0%
Intercad	.5	.3	.2	27	.4%	.4%	.3%	.8%
Assigraph	.5	.0	.2	2	.4%	.0%	.4%	.1%
Autodesk	.4	.0	.4	0	.3%	.0%	.8%	.0%
Dassault	.3	.0	.3	0	.2%	.0%	.6%	.0%
Thom 6	.1	.0	.1	0	.1%	.0%	.1%	.0%
Secmai	.1	.0	.0	0	.0%	.0%	.0%	.0%
Sycotronic AG	.1	.0	.0	0	.0%	.0%	.1%	.0%
Robocom	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 42 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Other Companies	20.5	11.1	8.1	996	15.7%	16.4%	18.0%	30.4%
All Companies	130.5	67.6	45.0	3,280	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	104.5	57.8	30.9	3,102	80.1%	85.5%	68.8%	94.6%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	26.0	9.8	14.0	178	19.9%	14.5%	31.2%	5.4%
All Hardware Companies	29.4	26.5	.0	2,485	22.5%	39.3%	.0%	75.8%
All Turnkey & SW Companies	101.1	41.0	45.0	795	77.5%	60.7%	100.0%	24.2%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 43  
 TITLE: 1988 Market Share  
 APPLICATION: IC Layout  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Cade	2.9	.7	1.3	13	10.8%	5.8%	13.2%	3.2%
Apollo	2.9	2.5	.0	125	10.7%	20.3%	.0%	30.1%
Siemens	2.1	1.3	.6	47	7.9%	10.3%	6.4%	11.3%
Digital	2.0	1.7	.0	26	7.6%	13.7%	.0%	6.2%
Mentor Graphics	1.9	1.0	.7	6	7.3%	8.1%	7.3%	1.5%
Sun	1.9	1.7	.0	88	6.9%	13.5%	.0%	21.2%
Valid	1.4	.7	.4	4	5.3%	6.0%	4.2%	1.0%
Silvar-Lisco	1.1	.0	.7	0	3.9%	.0%	7.3%	.0%
Control Data	1.0	.7	.1	5	3.7%	5.5%	1.2%	1.2%
European Silicon Structures	1.0	.0	1.0	0	3.6%	.0%	9.9%	.0%
Daisy Systems	.8	.3	.3	2	2.9%	2.4%	3.0%	.5%
Hewlett-Packard	.8	.5	.2	33	2.8%	4.0%	1.6%	7.8%
Intergraph	.6	.4	.1	7	2.4%	3.2%	1.2%	1.7%
Assigraph	.2	.0	.1	1	.7%	.0%	.5%	.2%
Plessey Semiconductors	.1	.0	.1	0	.3%	.0%	.6%	.0%
Other Companies	4.9	1.5	2.4	63	18.4%	12.0%	24.2%	15.2%
All Companies	26.7	12.3	9.8	415	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	20.5	10.3	6.8	354	76.7%	83.8%	69.4%	85.3%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	6.2	2.0	3.0	61	23.3%	16.2%	30.6%	14.7%
All Hardware Companies	7.9	6.9	.0	313	29.6%	56.2%	.0%	75.3%
All Turnkey & SW Companies	18.8	5.4	9.8	102	70.4%	43.8%	100.0%	24.7%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 44  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company	Total				Market Share			
	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Racal-Redac	16.2	1.5	13.3	31	16.1%	3.0%	34.8%	.9%
Hewlett-Packard	8.7	5.5	1.9	399	8.6%	11.4%	4.9%	12.0%
Daisy Systems	7.2	3.8	2.4	40	7.1%	7.8%	6.1%	1.2%
Calay	7.1	1.8	4.3	85	7.1%	3.7%	11.2%	2.6%
Mentor Graphics	6.1	3.1	2.2	53	6.0%	6.4%	5.8%	1.6%
IBM	5.1	3.7	.7	120	5.1%	7.6%	1.8%	3.6%
Cade	5.1	.9	2.9	9	5.0%	1.8%	7.5%	.3%
Digital	4.8	4.0	.0	60	4.7%	8.2%	.0%	1.8%
Intergraph	4.2	2.5	.8	45	4.1%	5.1%	2.1%	1.4%
Prime Computer	3.9	1.7	1.1	27	3.8%	3.5%	2.8%	.8%
Scientific Calc.	3.8	1.4	1.2	11	3.7%	3.0%	3.2%	.3%
Apollo	2.8	2.5	.0	124	2.8%	5.1%	.0%	3.7%
Ziegler Instruments GmbH	2.4	.0	2.3	0	2.4%	.0%	6.1%	.0%
Siemens	2.1	1.3	.6	47	2.1%	2.6%	1.6%	1.4%
Valid	2.0	1.0	.6	8	1.9%	2.1%	1.5%	.2%
Control Data	1.5	1.0	.2	8	1.4%	2.1%	.5%	.2%
CADAM	1.3	.0	1.2	0	1.3%	.0%	3.1%	.0%
Sun	1.2	1.1	.0	57	1.2%	2.2%	.0%	1.7%
Intercad	.8	.4	.2	42	.8%	.8%	.6%	1.3%
Sycotronic AG	.6	.0	.5	0	.6%	.0%	1.4%	.0%
Secmai	.5	.3	.1	4	.5%	.7%	.3%	.1%
Schlumberger (Applicon)	.5	.3	.0	1	.5%	.6%	.1%	.0%
Autodesk	.3	.0	.3	0	.3%	.0%	.7%	.0%
Assigraph	.2	.0	.1	1	.2%	.0%	.2%	.0%
CAD-UL	.2	.1	.1	5	.2%	.1%	.3%	.1%
Olivetti	.1	.0	.0	20	.1%	.1%	.1%	.6%
Robocom	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 44 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: German Region  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****
Other Companies	15.9	7.1	6.6	1,114	15.8%	14.8%	17.2%	33.4%
All Companies	100.7	48.4	38.3	3,335	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	65.4	42.2	13.8	3,090	64.9%	87.2%	36.0%	92.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	35.4	6.2	24.5	245	35.1%	12.8%	64.0%	7.3%
All Hardware Companies	20.3	18.9	.0	2,631	20.1%	39.0%	.0%	78.9%
All Turnkey & SW Companies	80.4	29.5	38.3	704	79.9%	61.0%	100.0%	21.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 45  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
IBM	78.9	47.9	20.4	2,213	23.7%	25.6%	21.3%	18.3%
Prime Computer	45.2	18.3	13.9	414	13.6%	9.8%	14.5%	3.4%
Digital	29.8	24.7	.0	376	8.9%	13.2%	.0%	3.1%
ItalCad	13.0	5.8	4.5	220	3.9%	3.1%	4.7%	1.8%
Intergraph	10.2	5.9	2.2	112	3.1%	3.1%	2.3%	.9%
Control Data	10.2	7.0	1.4	193	3.1%	3.7%	1.5%	1.6%
CAD Lab	9.9	.0	7.9	0	3.0%	.0%	8.2%	.0%
Mentor Graphics	8.6	4.4	3.2	179	2.6%	2.4%	3.3%	1.5%
Daisy Systems	7.5	3.7	2.1	89	2.2%	2.0%	2.1%	.7%
Olivetti	6.9	2.6	2.5	1,119	2.1%	1.4%	2.6%	9.2%
Matra Datavision	6.5	4.9	.7	171	2.0%	2.6%	.7%	1.4%
Autodesk	6.2	.0	6.2	0	1.8%	.0%	6.4%	.0%
Schlumberger (Applicon)	6.1	2.1	2.3	98	1.8%	1.1%	2.4%	.8%
Apollo	5.5	4.8	.0	241	1.6%	2.6%	.0%	2.0%
Dassault	5.0	.0	4.1	0	1.5%	.0%	4.3%	.0%
Siemens	4.0	2.4	1.2	79	1.2%	1.3%	1.3%	.6%
Sysscan	3.6	2.9	.7	51	1.1%	1.6%	.8%	.4%
Cimatron	3.3	2.7	.3	73	1.0%	1.5%	.3%	.6%
McDonnell Douglas	2.8	1.7	.5	65	.8%	.9%	.5%	.5%
PAFEC	2.5	.0	2.5	0	.8%	.0%	2.6%	.0%
Unisys	2.5	.7	1.5	62	.7%	.3%	1.5%	.5%
Ferranti	2.3	1.3	.6	19	.7%	.7%	.6%	.2%
Sun	2.2	2.0	.0	104	.7%	1.1%	.0%	.9%
MacNeal-Schwendler	1.9	.0	1.8	0	.6%	.0%	1.9%	.0%
SDRC	1.5	.0	1.5	0	.5%	.0%	1.6%	.0%
Valid	1.2	.7	.4	11	.4%	.3%	.4%	.1%
Scientific Calc.	1.1	.2	.6	4	.3%	.1%	.6%	.0%
ISICAD	1.0	.6	.2	11	.3%	.3%	.3%	.1%
Silvar-Lisco	.9	.0	.6	0	.3%	.0%	.6%	.0%
Cimlinc	.9	.5	.3	45	.3%	.2%	.3%	.4%
Hewlett-Packard	.6	.6	.0	0	.2%	.3%	.0%	.0%
Secmai	.6	.4	.1	5	.2%	.2%	.1%	.0%

(Continued)

# Market Share

TABLE NUMBER: 45 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Synercom	.6	.0	.4	0	.2%	.0%	.4%	.0%
Rotring euroCAD	.5	.2	.2	6	.1%	.1%	.3%	.0%
CADAM	.5	.0	.4	0	.1%	.0%	.4%	.0%
Ziegler Instruments GmbH	.4	.0	.3	0	.1%	.0%	.3%	.0%
T2 Solutions	.3	.2	.1	113	.1%	.1%	.1%	.9%
European Silicon Structures	.3	.0	.3	0	.1%	.0%	.3%	.0%
Racal-Redac	.3	.1	.2	1	.1%	.0%	.2%	.0%
Robocom	.2	.0	.2	0	.1%	.0%	.2%	.0%
Cisigraph	.2	.2	.0	330	.1%	.1%	.0%	2.7%
Calay	.1	.0	.1	1	.0%	.0%	.1%	.0%
Plessey Semiconductors	.1	.0	.1	0	.0%	.0%	.1%	.0%
Gerber Systems	.1	.0	.0	1	.0%	.0%	.0%	.0%
Catalpa	.0	.2	.0	19	.0%	.1%	.0%	.2%
Other Companies	39.9	29.7	9.3	3,694	12.0%	15.8%	9.7%	30.5%
All Companies	333.0	187.2	95.9	12,117	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	272.9	163.5	69.1	9,928	81.9%	87.3%	72.1%	81.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	60.2	23.8	26.7	2,188	18.1%	12.7%	27.9%	18.1%
All Hardware Companies	83.2	78.5	.0	7,650	25.0%	41.9%	.0%	63.1%
All Turnkey & SW Companies	249.8	108.8	95.9	4,466	75.0%	58.1%	100.0%	36.9%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 46  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company	Total				Market Share			
	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
Prime Computer	31.0	14.1	7.7	336	23.8%	22.6%	18.4%	15.0%
ItalCad	13.0	5.8	4.5	220	9.9%	9.4%	10.7%	9.8%
Digital	10.4	8.7	.0	376	8.0%	13.9%	.0%	16.8%
CAD Lab	8.9	.0	7.1	0	6.8%	.0%	16.8%	.0%
Mentor Graphics	8.6	4.4	3.2	179	6.6%	7.1%	7.6%	8.0%
Daisy Systems	7.2	3.6	2.0	84	5.5%	5.7%	4.7%	3.8%
Intergraph	6.7	3.9	1.4	49	5.1%	6.3%	3.2%	2.2%
Apollo	4.9	4.3	.0	219	3.8%	7.0%	.0%	9.8%
Schlumberger (Applicon)	4.2	1.4	1.5	56	3.2%	2.3%	3.7%	2.5%
IBM	3.5	2.5	.4	75	2.7%	4.1%	1.0%	3.3%
Siemens	3.2	2.0	1.0	72	2.5%	3.1%	2.3%	3.2%
Cimatron	3.0	2.5	.2	65	2.3%	3.9%	.6%	2.9%
Control Data	2.7	1.8	.5	43	2.0%	2.8%	1.1%	1.9%
PAFEC	2.2	.0	2.2	0	1.7%	.0%	5.1%	.0%
Unisys	1.9	.5	1.1	46	1.4%	.8%	2.6%	2.1%
Sun	1.9	1.7	.0	93	1.4%	2.7%	.0%	4.2%
Valid	1.2	.6	.4	10	.9%	1.0%	.8%	.4%
SDRC	1.0	.0	1.0	0	.8%	.0%	2.5%	.0%
Dassault	1.0	.0	.8	0	.8%	.0%	1.9%	.0%
ISICAD	.9	.6	.1	11	.7%	1.0%	.3%	.5%
McDonnell Douglas	.9	.6	.2	16	.7%	.9%	.4%	.7%
Cimline	.9	.4	.3	42	.6%	.7%	.7%	1.9%
Silvar-Lisco	.7	.0	.5	0	.6%	.0%	1.2%	.0%
Scientific Calc.	.7	.2	.4	3	.5%	.3%	.9%	.1%
Secmai	.6	.3	.1	5	.4%	.5%	.3%	.2%
Autodesk	.3	.0	.3	0	.2%	.0%	.7%	.0%
European Silicon Structures	.3	.0	.3	0	.2%	.0%	.6%	.0%
Rotring euroCAD	.2	.1	.1	2	.2%	.2%	.3%	.1%
T2 Solutions	.2	.2	.0	58	.2%	.2%	.1%	2.6%
Racal-Redac	.2	.1	.1	1	.2%	.1%	.3%	.0%
MacNeal-Schwendler	.2	.0	.2	0	.1%	.0%	.4%	.0%
Calay	.1	.0	.1	1	.1%	.0%	.1%	.0%

(Continued)



# Market Share

TABLE NUMBER: 46 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Cisigraph	.1	.1	.0	55	.0%	.1%	.0%	2.5%
Ferranti	.1	.0	.0	1	.0%	.0%	.0%	.0%
Plessey Semiconductors	.1	.0	.1	0	.0%	.0%	.1%	.0%
Gerber Systems	.1	.0	.0	1	.0%	.0%	.0%	.0%
Catalpa	.0	.2	.0	19	.0%	.3%	.1%	.8%
Other Companies	13.6	3.5	7.9	153	10.4%	5.7%	18.6%	6.9%
All Companies	130.4	62.4	42.1	2,236	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	97.3	51.4	25.5	1,755	74.6%	82.3%	60.5%	78.5%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	33.1	11.1	16.6	481	25.4%	17.7%	39.5%	21.5%
All Hardware Companies	19.2	16.4	.0	773	14.7%	26.3%	.0%	34.6%
All Turnkey & SW Companies	111.2	46.0	42.1	1,463	85.3%	73.7%	100.0%	65.4%

Source: Dataquest  
April 1989

# Market Share

TABLE NUMBER: 47  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	66.3	36.4	19.9	707	43.0%	39.2%	50.3%	31.8%
Digital	19.4	16.1	.0	0	12.6%	17.3%	.0%	.0%
Prime Computer	12.4	3.9	4.8	61	8.0%	4.2%	12.2%	2.8%
Control Data	7.5	5.2	.9	150	4.9%	5.6%	2.4%	6.7%
Matra Datavision	6.5	4.9	.7	171	4.2%	5.3%	1.6%	7.7%
Dassault	4.0	.0	3.3	0	2.6%	.0%	8.4%	.0%
Sysscan	3.6	2.9	.7	51	2.4%	3.1%	1.8%	2.3%
Intergraph	3.4	2.0	.7	63	2.2%	2.1%	1.8%	2.8%
Ferranti	2.3	1.3	.6	18	1.5%	1.4%	1.5%	.8%
Schlumberger (Applicon)	2.0	.7	.7	42	1.3%	.7%	1.8%	1.9%
McDonnell Douglas	1.9	1.2	.3	49	1.2%	1.3%	.8%	2.2%
MacNeal-Schwendler	1.7	.0	1.6	0	1.1%	.0%	4.0%	.0%
Siemens	.8	.4	.2	6	.5%	.5%	.6%	.3%
Unisys	.6	.2	.4	16	.4%	.2%	.9%	.7%
Synercom	.6	.0	.4	0	.4%	.0%	1.1%	.0%
Apollo	.5	.5	.0	21	.4%	.5%	.0%	1.0%
Olivetti	.5	.3	.2	35	.3%	.3%	.5%	1.6%
SDRC	.5	.0	.5	0	.3%	.0%	1.2%	.0%
PAFEC	.4	.0	.4	0	.2%	.0%	1.0%	.0%
Scientific Calc.	.4	.0	.2	1	.2%	.0%	.6%	.0%
Sun	.3	.3	.0	10	.2%	.3%	.0%	.5%
Daisy Systems	.2	.1	.1	4	.1%	.1%	.1%	.2%
Silvar-Lisco	.2	.0	.1	0	.1%	.0%	.3%	.0%
Cisigraph	.1	.1	.0	275	.1%	.1%	.1%	12.4%
T2 Solutions	.1	.1	.0	55	.1%	.1%	.1%	2.5%
Cimline	.0	.0	.0	3	.0%	.0%	.0%	.1%
Plessey Semiconductors	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 47 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****
Other Companies	14.8	16.4	.1	515	9.6%	17.6%	.1%	23.2%
All Companies	154.1	93.0	39.5	2,222	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	135.6	83.1	33.4	1,609	88.0%	89.3%	84.4%	72.4%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	18.4	9.9	6.2	612	12.0%	10.7%	15.6%	27.6%
All Hardware Companies	36.7	34.7	.0	492	23.8%	37.3%	.0%	22.1%
All Turnkey & SW Companies	117.4	58.3	39.5	1,730	76.2%	62.7%	100.0%	77.9%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 48  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
IBM	9.2	9.0	.1	1,431	18.9%	28.2%	1.0%	18.7%
Olivetti	6.3	2.4	2.3	1,084	13.1%	7.5%	16.1%	14.1%
Autodesk	5.9	.0	5.9	0	12.0%	.0%	41.2%	.0%
Prime Computer	1.8	.3	1.4	16	3.7%	.9%	9.6%	.2%
CAD Lab	1.0	.0	.8	0	2.0%	.0%	5.6%	.0%
Hewlett-Packard	.6	.6	.0	0	1.3%	1.9%	.0%	.0%
CADAM	.5	.0	.4	0	.9%	.0%	2.9%	.0%
Ziegler Instruments GmbH	.4	.0	.3	0	.7%	.0%	2.3%	.0%
Cimatron	.3	.3	.0	7	.7%	.9%	.2%	.1%
Rotring euroCAD	.2	.1	.1	4	.5%	.3%	.8%	.1%
Robocom	.2	.0	.2	0	.4%	.0%	1.5%	.0%
Intergraph	.2	.0	.2	0	.4%	.0%	1.1%	.0%
Racal-Redac	.1	.0	.1	0	.2%	.0%	.8%	.0%
ISICAD	.1	.0	.1	0	.2%	.0%	.7%	.0%
European Silicon Structures	.1	.0	.1	0	.1%	.0%	.4%	.0%
Daisy Systems	.1	.0	.0	0	.1%	.0%	.3%	.0%
Valid	.1	.0	.0	1	.1%	.1%	.1%	.0%
MacNeal-Schwendler	.0	.0	.0	0	.1%	.0%	.3%	.0%
Secmaí	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	11.4	9.8	1.4	3,026	23.5%	30.7%	10.0%	39.5%
All Companies	48.6	31.8	14.2	7,659	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	39.9	29.0	10.3	6,564	82.2%	91.3%	72.2%	85.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	8.7	2.8	3.9	1,095	17.8%	8.7%	27.8%	14.3%
All Hardware Companies	27.3	27.3	.0	6,386	56.3%	86.0%	.0%	83.4%
All Turnkey & SW Companies	21.2	4.5	14.2	1,273	43.7%	14.0%	100.0%	16.6%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 49  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	68.5	40.8	18.3	1,626	30.5%	32.1%	28.8%	20.4%
Prime Computer	36.1	14.5	11.2	320	16.1%	11.4%	17.6%	4.0%
Digital	16.4	13.6	.0	207	7.3%	10.7%	.0%	2.6%
Control Data	8.9	6.1	1.2	174	4.0%	4.8%	1.9%	2.2%
ItalCad	7.8	3.5	2.7	132	3.5%	2.8%	4.3%	1.7%
CAD Lab	6.9	.0	5.5	0	3.1%	.0%	8.6%	.0%
Matra Datavision	6.5	4.9	.7	171	2.9%	3.9%	1.0%	2.1%
Schlumberger (Applicon)	6.0	2.1	2.2	96	2.7%	1.6%	3.5%	1.2%
Olivetti	5.0	1.9	2.0	818	2.2%	1.5%	3.2%	10.2%
Dassault	4.3	.0	3.5	0	1.9%	.0%	5.5%	.0%
Cimatron	3.3	2.7	.3	73	1.5%	2.2%	.4%	.9%
Intergraph	3.1	1.7	.7	34	1.4%	1.4%	1.1%	.4%
Autodesk	2.7	.0	2.7	0	1.2%	.0%	4.3%	.0%
Unisys	2.5	.7	1.5	62	1.1%	.5%	2.3%	.8%
Ferranti	2.3	1.3	.6	19	1.0%	1.1%	.9%	.2%
Apollo	2.2	2.0	.0	98	1.0%	1.5%	.0%	1.2%
PAFEC	2.0	.0	2.0	0	.9%	.0%	3.2%	.0%
McDonnell Douglas	2.0	1.2	.3	33	.9%	1.0%	.5%	.4%
MacNeal-Schwendler	1.9	.0	1.8	0	.9%	.0%	2.8%	.0%
SDRC	1.5	.0	1.5	0	.7%	.0%	2.4%	.0%
Siemens	.9	.5	.3	19	.4%	.4%	.4%	.2%
Sun	.9	.8	.0	41	.4%	.6%	.0%	.5%
Cimline	.9	.5	.3	44	.4%	.4%	.4%	.5%
ISICAD	.8	.5	.2	8	.4%	.4%	.3%	.1%
Hewlett-Packard	.3	.3	.0	0	.1%	.2%	.0%	.0%
Rotring euroCAD	.3	.1	.1	4	.1%	.1%	.2%	.0%
Cisigraph	.2	.2	.0	330	.1%	.1%	.0%	4.1%
Ziegler Instruments GmbH	.1	.0	.1	0	.0%	.0%	.2%	.0%
Robocom	.1	.0	.1	0	.0%	.0%	.2%	.0%
Gerber Systems	.1	.0	.0	1	.0%	.0%	.0%	.0%
Catalpa	.0	.2	.0	19	.0%	.1%	.1%	.2%

(Continued)

# Market Share

TABLE NUMBER: 49 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****
Other Companies	27.9	22.0	6.0	2,160	12.4%	17.3%	9.5%	27.1%
All Companies	224.3	127.2	63.5	7,981	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	184.4	112.0	45.5	6,415	82.2%	88.0%	71.7%	80.4%
All Asian-Based Companies	0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	39.7	15.2	18.0	1,567	17.8%	12.0%	28.3%	19.6%
All Hardware Companies	51.3	50.0	.0	4,783	23.1%	39.3%	.0%	59.9%
All Turnkey & SW Companies	172.3	77.2	63.5	3,198	76.9%	60.7%	100.0%	40.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 50  
 TITLE: 1988 Market Share  
 APPLICATION: AEC  
 PLATFORM: All Platforms  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Prime Computer	5.7	2.3	1.8	67	14.0%	10.2%	14.8%	2.9%
IBM	5.6	4.2	.9	428	13.7%	18.2%	7.9%	18.5%
Digital	4.5	3.7	.0	56	11.0%	16.3%	.0%	2.4%
Intergraph	4.3	2.5	.9	47	10.5%	10.8%	7.9%	2.0%
ItalCad	3.2	1.5	1.1	55	7.9%	6.4%	9.5%	2.4%
CAD Lab	3.0	.0	2.4	0	7.4%	.0%	20.2%	.0%
Autodesk	1.9	.0	1.9	0	4.5%	.0%	15.5%	.0%
Siemens	1.6	.9	.5	30	3.9%	4.1%	3.9%	1.3%
Olivetti	.3	.5	.2	131	2.1%	2.0%	1.8%	5.7%
McDonnell Douglas	.8	.5	.1	31	1.9%	2.1%	1.1%	1.3%
Apollo	.6	.6	.0	28	1.6%	2.5%	.0%	1.2%
Dassault	.6	.0	.5	0	1.5%	.0%	4.2%	.0%
PAFEC	.5	.0	.5	0	1.2%	.0%	4.2%	.0%
T2 Solutions	.3	.2	.1	113	.8%	1.0%	.4%	4.9%
Control Data	.2	.1	.0	4	.5%	.6%	.3%	.2%
ISICAD	.2	.1	.1	2	.5%	.6%	.4%	.1%
Hewlett-Packard	.2	.2	.0	0	.4%	.7%	.0%	.0%
Robocom	.1	.0	.1	0	.2%	.0%	.8%	.0%
Sun	.1	.1	.0	3	.2%	.3%	.0%	.1%
Ziegler Instruments GmbH	.1	.0	.0	0	.1%	.0%	.3%	.0%
Cimlinc	.0	.0	.0	1	.1%	.0%	.1%	.1%
Other Companies	7.4	4.1	2.6	1,057	18.2%	18.1%	21.7%	45.6%
All Companies	40.8	22.8	11.9	2,317	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	30.6	19.8	6.5	1,988	75.0%	86.5%	54.7%	85.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	10.2	3.1	5.4	329	25.0%	13.5%	45.3%	14.2%
All Hardware Companies	13.2	12.3	.0	1,783	32.3%	53.7%	.0%	77.0%
All Turnkey & SW Companies	27.6	10.6	11.9	534	67.7%	46.3%	100.0%	23.0%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 51  
 TITLE: 1988 Market Share  
 APPLICATION: Mapping  
 PLATFORM: All Platforms  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Sysscan	3.6	2.9	.7	51	17.7%	24.3%	12.6%	7.1%
Digital	3.0	2.5	.0	38	14.5%	20.6%	.0%	5.2%
IBM	2.3	1.4	.6	66	11.4%	11.8%	10.5%	9.2%
Intergraph	2.1	1.2	.5	23	10.2%	10.0%	8.0%	3.2%
ItalCad	1.9	.9	.7	33	9.4%	7.4%	11.9%	4.6%
Siemens	1.6	.9	.5	30	7.6%	7.9%	8.2%	4.1%
Olivetti	1.0	.3	.3	168	4.9%	2.4%	4.7%	23.2%
Autodesk	.6	.0	.6	0	2.8%	.0%	10.1%	.0%
Synercom	.6	.0	.4	0	2.7%	.0%	7.5%	.0%
Prime Computer	.4	.2	.1	3	1.9%	1.3%	1.9%	.4%
McDonnell Douglas	.1	.0	.0	1	.3%	.3%	.2%	.1%
Sun	.1	.1	.0	3	.3%	.4%	.0%	.4%
Apollo	.0	.0	.0	2	.2%	.3%	.0%	.3%
Hewlett-Packard	.0	.0	.0	0	.1%	.2%	.0%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.1%	.0%	.3%	.0%
Robocom	.0	.0	.0	0	.0%	.0%	.2%	.0%
Other Companies	1.2	1.1	.0	236	5.6%	9.4%	.5%	32.6%
All Companies	20.5	12.0	5.7	723	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	12.4	7.0	3.6	441	60.2%	58.1%	62.1%	61.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	8.2	5.0	2.2	281	39.8%	41.9%	37.9%	38.9%
All Hardware Companies	4.7	4.1	.0	378	22.7%	34.6%	.0%	52.3%
All Turnkey & SW Companies	15.9	7.8	5.7	345	77.3%	65.4%	100.0%	47.7%

Source: Dataquest  
 April 1989



# Market Share

TABLE NUMBER: 52  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Mentor Graphics	8.6	4.4	3.2	179	18.2%	17.5%	21.7%	16.3%
Daisy Systems	7.5	3.7	2.1	89	15.7%	14.5%	14.0%	8.1%
Digital	6.0	5.0	.0	75	12.6%	19.7%	.0%	6.9%
Prime Computer	3.0	1.3	.9	24	6.4%	5.3%	5.9%	2.2%
Apollo	2.6	2.3	.0	113	5.4%	8.9%	.0%	10.3%
IBM	2.5	1.6	.6	93	5.3%	6.3%	4.2%	8.5%
Valid	1.2	.7	.4	11	2.6%	2.6%	2.5%	1.0%
Sun	1.2	1.1	.0	57	2.5%	4.3%	.0%	5.2%
Control Data	1.1	.8	.2	16	2.4%	3.1%	1.1%	1.4%
Scientific Calc.	1.1	.2	.6	4	2.3%	.8%	4.1%	.4%
Autodesk	1.0	.0	1.0	0	2.1%	.0%	6.7%	.0%
Silver-Lisco	.9	.0	.6	0	1.9%	.0%	4.2%	.0%
Intergraph	.8	.5	.2	9	1.6%	1.8%	1.2%	.8%
Secmai	.6	.4	.1	5	1.2%	1.4%	.8%	.4%
CADAM	.5	.0	.4	0	1.0%	.0%	2.8%	.0%
European Silicon Structures	.3	.0	.3	0	.7%	.0%	2.1%	.0%
Racal-Redac	.3	.1	.2	1	.7%	.3%	1.5%	.1%
Rotring euroCAD	.2	.1	.1	2	.4%	.3%	.7%	.2%
Ziegler Instruments GmbH	.2	.0	.2	0	.4%	.0%	1.2%	.0%
Dassault	.2	.0	.1	0	.3%	.0%	.8%	.0%
Hewlett-Packard	.2	.2	.0	0	.3%	.6%	.0%	.0%
Calay	.1	.0	.1	1	.2%	.1%	.4%	.1%
Plessey Semiconductors	.1	.0	.1	0	.2%	.0%	.4%	.0%
Schlumberger (Applicon)	.1	.0	.0	2	.2%	.1%	.2%	.2%
Robocom	.0	.0	.0	0	.0%	.0%	.1%	.0%

(Continued)

# Market Share

TABLE NUMBER: 52 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****
Other Companies	3.4	2.4	.7	241	7.1%	9.6%	4.6%	22.0%
All Companies	47.4	25.2	14.7	1,096	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	45.5	24.8	13.5	1,084	96.0%	98.2%	92.0%	99.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.9	.5	1.2	11	4.0%	1.8%	8.0%	1.0%
All Hardware Companies	13.6	12.1	.0	707	28.7%	47.8%	.0%	64.5%
All Turnkey & SW Companies	33.8	13.2	14.7	389	71.3%	52.2%	100.0%	35.5%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 53  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
Mentor Graphics	5.8	3.0	2.1	150	23.2%	22.3%	27.3%	24.2%
Daisy Systems	5.3	2.6	1.5	69	21.2%	19.3%	18.6%	11.1%
Digital	3.0	2.5	.0	38	11.9%	18.7%	.0%	6.1%
Apollo	1.6	1.4	.0	70	6.4%	10.6%	.0%	11.3%
Valid	1.0	.5	.3	10	4.1%	4.0%	3.9%	1.6%
Prime Computer	.9	.4	.3	9	3.4%	2.8%	3.3%	1.5%
Autodesk	.8	.0	.8	0	3.0%	.0%	9.6%	.0%
Sun	.7	.6	.0	32	2.6%	4.5%	.0%	5.1%
Control Data	.6	.4	.1	6	2.5%	3.2%	1.1%	1.0%
Silvar-Lisco	.4	.0	.2	0	1.4%	.0%	3.1%	.0%
IBM	.2	.2	.0	39	.9%	1.7%	.0%	6.3%
Rotring euroCAD	.2	.1	.1	2	.8%	.6%	1.3%	.4%
Dassault	.2	.0	.1	0	.6%	.0%	1.5%	.0%
Ziegler Instruments GmbH	.1	.0	.1	0	.4%	.0%	1.3%	.0%
Hewlett-Packard	.1	.1	.0	0	.3%	.6%	.0%	.0%
Intergraph	.1	.1	.0	1	.3%	.4%	.3%	.1%
Secmai	.1	.0	.0	0	.2%	.2%	.3%	.1%
Racal-Redac	.1	.0	.0	0	.2%	.1%	.5%	.0%
Robocom	.0	.0	.0	0	.0%	.0%	.1%	.0%
Other Companies	1.2	1.0	.1	118	4.6%	7.2%	1.7%	19.0%
All Companies	25.0	13.3	7.9	621	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	24.5	13.2	7.5	618	97.7%	99.1%	95.0%	99.5%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.6	.1	.4	3	2.3%	.9%	5.0%	.5%
All Hardware Companies	7.0	6.2	.0	358	28.0%	46.6%	.0%	57.6%
All Turnkey & SW Companies	18.0	7.1	7.9	263	72.0%	53.4%	100.0%	42.4%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 54  
 TITLE: 1988 Market Share  
 APPLICATION: IC Layout  
 PLATFORM: All Platforms  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Digital	.9	.7	.0	11	15.7%	30.5%	.0%	15.2%
Mentor Graphics	.7	.4	.3	9	12.2%	14.4%	10.8%	12.7%
Silvar-Lisco	.5	.0	.4	0	9.5%	.0%	15.9%	.0%
Apollo	.5	.4	.0	21	8.7%	17.3%	.0%	28.6%
Daisy Systems	.3	.2	.1	3	5.7%	6.2%	3.9%	3.4%
Sun	.3	.3	.0	15	5.7%	11.5%	.0%	20.0%
European Silicon Structures	.3	.0	.3	0	5.5%	.0%	13.4%	.0%
Control Data	.2	.1	.0	4	3.7%	5.8%	1.3%	4.7%
Intergraph	.1	.1	.0	1	1.6%	2.1%	.9%	1.4%
Valid	.1	.1	.0	0	1.6%	2.1%	1.3%	.3%
Plessey Semiconductors	.1	.0	.1	0	1.4%	.0%	2.6%	.0%
Hewlett-Packard	.0	.0	.0	0	.2%	.4%	.0%	.0%
Other Companies	.7	.2	.4	9	12.2%	9.5%	15.9%	12.0%
All Companies	5.7	2.4	2.3	74	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	5.3	2.5	2.0	74	93.1%	102.9%	84.1%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.4	(.1)	.4	0	6.9%	-2.9%	15.9%	.0%
All Hardware Companies	2.1	1.8	.0	57	36.4%	73.7%	.0%	76.3%
All Turnkey & SW Companies	3.6	.6	2.3	18	63.6%	26.3%	100.0%	23.7%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 55  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: Italy  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	2.3	1.4	.6	54	13.7%	14.3%	13.5%	13.4%
Prime Computer	2.2	1.0	.6	15	13.0%	10.2%	13.5%	3.8%
Mentor Graphics	2.2	1.1	.8	19	12.8%	11.6%	17.7%	4.7%
Digital	2.1	1.7	.0	26	12.5%	18.3%	.0%	6.6%
Daisy Systems	1.8	1.0	.5	18	10.9%	10.0%	11.3%	4.4%
Scientific Calc.	1.1	.2	.6	4	6.5%	2.0%	13.3%	1.0%
Intergraph	.6	.4	.1	7	3.6%	3.8%	2.9%	1.7%
Secma	.5	.3	.1	4	3.1%	3.4%	2.2%	1.1%
Apollo	.5	.4	.0	21	2.9%	4.4%	.0%	5.3%
CADAM	.5	.0	.4	0	2.7%	.0%	9.1%	.0%
Control Data	.3	.2	.0	6	1.8%	2.2%	.9%	1.6%
Racal-Redac	.3	.1	.2	1	1.6%	.6%	4.0%	.1%
Autodesk	.2	.0	.2	0	1.4%	.0%	5.3%	.0%
Sun	.2	.2	.0	11	1.3%	2.1%	.0%	2.6%
Valid	.1	.1	.0	1	.8%	.7%	.7%	.1%
Calay	.1	.0	.1	1	.5%	.2%	1.3%	.3%
Schlumberger (Applicon)	.1	.0	.0	2	.5%	.2%	.7%	.5%
Ziegler Instruments GmbH	.1	.0	.1	0	.4%	.0%	1.6%	.0%
Hewlett-Packard	.1	.1	.0	0	.4%	.6%	.0%	.0%
Other Companies	1.5	1.2	.2	114	9.1%	12.9%	3.8%	28.5%
All Companies	16.8	9.5	4.5	400	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	15.8	9.1	4.1	392	94.4%	95.8%	90.9%	97.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.9	.4	.4	8	5.6%	4.2%	9.1%	2.1%
All Hardware Companies	4.6	4.1	.0	292	27.2%	42.9%	.0%	73.0%
All Turnkey & SW Companies	12.2	5.4	4.5	108	72.8%	57.1%	100.0%	27.0%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 56  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	72.0	52.4	10.0	1,975	22.6%	26.2%	13.2%	18.4%
Prime Computer	53.1	26.4	12.0	487	16.6%	13.2%	15.9%	4.5%
Intergraph	33.4	21.3	5.2	366	10.5%	10.7%	6.8%	3.4%
Digital	27.7	21.0	.0	349	8.7%	10.5%	.0%	3.3%
Norsk Data	10.1	5.0	3.0	14	3.2%	2.5%	3.9%	.1%
McDonnell Douglas	8.2	5.9	.5	131	2.6%	3.0%	.7%	1.2%
Sysscan	6.6	3.9	2.6	8	2.1%	2.0%	3.5%	.1%
Autodesk	6.4	.0	6.4	0	2.0%	.0%	8.5%	.0%
Mentor Graphics	6.3	2.1	3.4	121	2.0%	1.0%	4.5%	1.1%
Apollo	5.2	4.5	.0	227	1.6%	2.2%	.0%	2.1%
Daisy Systems	5.1	2.3	1.7	40	1.6%	1.2%	2.3%	.4%
Racal-Redac	3.7	.3	3.0	7	1.2%	.2%	4.0%	.1%
PAFEC	3.5	.0	3.5	0	1.1%	.0%	4.6%	.0%
Control Data	2.8	2.1	.3	20	.9%	1.0%	.4%	.2%
Dassault	2.8	.0	2.3	0	.9%	.0%	3.0%	.0%
Schlumberger (Applicon)	2.7	.9	1.0	182	.8%	.5%	1.3%	1.7%
Sun	2.2	2.0	.0	103	.7%	1.0%	.0%	1.0%
Valid	2.1	.9	.8	18	.6%	.5%	1.1%	.2%
Cimline	2.1	1.1	.7	105	.6%	.6%	.9%	1.0%
Siemens	1.8	1.1	.6	38	.6%	.6%	.7%	.4%
Autokon CIM Systems	1.7	.1	1.6	2	.5%	.1%	2.1%	.0%
Matra Datavision	1.5	.8	.5	9	.5%	.4%	.6%	.1%
Olivetti	1.1	.5	.4	209	.3%	.3%	.6%	1.9%
Exapt	1.1	.8	.2	16	.3%	.4%	.3%	.2%
CADAM	1.1	.0	.9	0	.3%	.0%	1.2%	.0%
SDRC	1.0	.0	1.0	0	.3%	.0%	1.3%	.0%
Aucotec	.9	.0	.3	433	.3%	.0%	.3%	4.0%
European Silicon Structures	.7	.0	.7	0	.2%	.0%	.9%	.0%
Gerber Systems	.6	.4	.3	10	.2%	.2%	.3%	.1%
Cisigraph	.6	.4	.1	66	.2%	.2%	.1%	.6%
Ziegler Instruments GmbH	.6	.0	.6	0	.2%	.0%	.7%	.0%
MacNeal-Schwendler	.6	.0	.6	0	.2%	.0%	.7%	.0%

(Continued)

# Market Share

TABLE NUMBER: 56 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Silvar-Lisco	.6	.0	.4	0	.2%	.0%	.5%	.0%
Scientific Calc.	.5	.2	.2	2	.2%	.1%	.2%	.0%
Unisys	.5	.3	.2	9	.2%	.1%	.2%	.1%
Ferranti	.3	.2	.0	3	.1%	.1%	.0%	.0%
Westward	.2	.2	.0	56	.1%	.1%	.0%	.5%
Calay	.2	.1	.0	2	.1%	.1%	.1%	.0%
Secmai	.2	.1	.0	2	.1%	.1%	.0%	.0%
Thom 6	.2	.0	.2	0	.1%	.0%	.2%	.0%
CAD Lab	.1	.0	.1	0	.0%	.0%	.1%	.0%
Robocom	.1	.0	.1	0	.0%	.0%	.1%	.0%
Superdraft	.1	.0	.1	0	.0%	.0%	.1%	.0%
Intercad	.1	.1	.0	5	.0%	.0%	.0%	.0%
ISYKON Software	.1	.1	.0	124	.0%	.0%	.0%	1.2%
Plessey Semiconductors	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	31.4	32.5	5.3	4,074	9.9%	16.3%	6.9%	38.0%
All Companies	319.0	199.5	75.8	10,730	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	282.4	185.8	57.5	9,739	88.5%	93.1%	75.8%	90.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	36.7	13.7	18.3	992	11.5%	6.9%	24.2%	9.2%
All Hardware Companies	72.3	72.2	.0	7,244	22.7%	36.2%	.0%	67.5%
All Turnkey & SW Companies	246.8	127.3	75.8	3,486	77.3%	63.8%	100.0%	32.5%

Source: Dataquest  
April 1989

# Market Share

TABLE NUMBER: 57  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Prime Computer	32.4	17.2	5.8	360	27.5%	28.0%	18.5%	18.8%
Intergraph	21.7	14.1	3.1	161	18.4%	23.0%	9.7%	8.4%
Digital	9.7	6.1	.0	349	8.2%	9.9%	.0%	18.3%
Mentor Graphics	6.3	2.1	3.4	121	5.3%	3.4%	11.0%	6.3%
Apollo	4.7	4.0	.0	207	4.0%	6.5%	.0%	10.8%
Daisy Systems	4.6	2.1	1.6	36	3.9%	3.4%	5.0%	1.9%
Norsk Data	4.1	2.0	1.2	6	3.4%	3.3%	3.9%	.3%
IBM	3.2	2.3	.4	68	2.7%	3.7%	1.4%	3.6%
PAFEC	3.0	.0	3.0	0	2.5%	.0%	9.5%	.0%
McDonnell Douglas	2.6	1.9	.2	45	2.2%	3.1%	.5%	2.4%
Racal-Redac	2.4	.3	1.7	7	2.0%	.6%	5.6%	.4%
Valid	2.0	.9	.8	17	1.7%	1.4%	2.5%	.9%
Cimlinc	2.0	1.0	.7	98	1.7%	1.6%	2.2%	5.2%
Schlumberger (Applicon)	1.8	.6	.7	25	1.6%	1.0%	2.2%	1.3%
Sun	1.8	1.7	.0	93	1.6%	2.7%	.0%	4.8%
Autokon CIM Systems	1.7	.1	1.6	2	1.5%	.2%	5.1%	.1%
Siemens	1.6	1.0	.5	36	1.4%	1.6%	1.5%	1.9%
Control Data	.7	.6	.0	12	.6%	.9%	.1%	.6%
SDRC	.7	.0	.7	0	.6%	.0%	2.2%	.0%
Gerber Systems	.5	.4	.3	10	.5%	.6%	.8%	.5%
Dassault	.6	.0	.5	0	.5%	.0%	1.5%	.0%
Silvar-Lisco	.5	.0	.3	0	.4%	.0%	1.0%	.0%
European Silicon Structures	.4	.0	.4	0	.3%	.0%	1.3%	.0%
Unisys	.4	.2	.1	6	.3%	.3%	.4%	.3%
Scientific Calc.	.3	.2	.1	2	.3%	.3%	.2%	.1%
Exapt	.3	.2	.1	5	.3%	.3%	.3%	.3%
Autodesk	.3	.0	.3	0	.3%	.0%	1.0%	.0%
Calay	.2	.1	.0	2	.2%	.2%	.1%	.1%
Cisigraph	.2	.1	.0	11	.2%	.2%	.1%	.6%
Secmai	.2	.1	.0	1	.2%	.2%	.1%	.1%
CAD Lab	.1	.0	.1	0	.1%	.0%	.3%	.0%
Thom 6	.1	.0	.1	0	.1%	.0%	.3%	.0%

(Continued)



# Market Share

TABLE NUMBER: 57 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
MacNeal-Schwendler	.1	.0	.1	0	.1%	.0%	.2%	.0%
Aucotec	.1	(.0)	.0	22	.0%	.0%	.0%	1.1%
ISYKON Software	.1	.0	.0	124	.0%	.1%	.1%	6.5%
Plessey Semiconductors	.0	.0	.0	0	.0%	.0%	.1%	.0%
Other Companies	3.6	.9	2.4	178	3.0%	1.5%	7.7%	9.3%
All Companies	117.9	61.4	31.4	1,910	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	104.6	57.4	23.6	1,695	88.7%	93.5%	75.3%	88.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	13.3	4.0	7.7	215	11.3%	6.5%	24.7%	11.3%
All Hardware Companies	17.6	13.0	.0	711	14.9%	21.1%	.0%	37.2%
All Turnkey & SW Companies	100.4	48.4	31.4	1,199	85.1%	78.9%	100.0%	62.8%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 58  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	60.7	42.5	9.1	648	39.8%	41.9%	32.2%	36.9%
Prime Computer	18.8	8.9	4.8	110	12.3%	8.8%	17.0%	6.3%
Digital	18.0	14.9	.0	0	11.8%	14.7%	.0%	.0%
Intergraph	11.1	7.2	1.6	205	7.3%	7.1%	5.5%	11.7%
Syscon	6.6	3.9	2.6	8	4.3%	3.9%	9.3%	.5%
Norsk Data	5.9	3.0	1.8	7	3.9%	2.9%	6.2%	.4%
McDonnell Douglas	5.5	4.0	.4	86	3.6%	4.0%	1.3%	4.9%
Dassault	2.2	.0	1.8	0	1.5%	.0%	6.5%	.0%
Control Data	2.1	1.5	.3	8	1.4%	1.5%	.9%	.5%
Matra Datavision	1.5	.8	.5	9	1.0%	.8%	1.6%	.5%
Schlumberger (Applicon)	.9	.3	.3	157	.6%	.3%	1.1%	8.9%
Exapt	.8	.6	.1	11	.5%	.6%	.5%	.6%
PAFEC	.5	.0	.5	0	.4%	.0%	1.9%	.0%
MacNeal-Schwendler	.5	.0	.5	0	.3%	.0%	1.7%	.0%
Apollo	.5	.5	.0	20	.3%	.5%	.0%	1.2%
Cisigraph	.4	.3	.1	55	.3%	.3%	.2%	3.1%
Daisy Systems	.4	.2	.1	4	.2%	.2%	.3%	.2%
Sun	.3	.3	.0	10	.2%	.3%	.0%	.6%
SDRC	.3	.0	.3	0	.2%	.0%	1.1%	.0%
Ferranti	.3	.2	.0	3	.2%	.2%	.1%	.1%
European Silicon Structures	.3	.0	.3	0	.2%	.0%	.9%	.0%
Siemens	.2	.1	.1	2	.1%	.1%	.2%	.1%
Westward	.2	.2	.0	14	.1%	.2%	.0%	.8%
Scientific Calc.	.2	.0	.1	0	.1%	.0%	.4%	.0%
Unisys	.1	.1	.0	2	.1%	.1%	.1%	.1%
Cimline	.1	.1	.0	7	.1%	.1%	.0%	.4%
Silvar-Lisco	.1	.0	.1	0	.1%	.0%	.2%	.0%
Olivetti	.1	.0	.0	5	.0%	.0%	.1%	.3%
Aucotec	.1	.0	.0	22	.0%	.0%	.1%	1.2%
Thom 6	.1	.0	.1	0	.0%	.0%	.2%	.0%
ISKON Software	.0	.0	.0	0	.0%	.0%	.0%	.0%
Plessey Semiconductors	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 58 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Other Companies	11.6	12.3	.5	369	7.6%	12.1%	1.7%	21.1%
All Companies	152.4	101.4	28.3	1,755	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	133.4	92.2	20.4	1,620	87.5%	91.0%	72.1%	92.3%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	19.1	9.2	7.9	135	12.5%	9.0%	27.9%	7.7%
All Hardware Companies	29.6	27.6	.0	354	19.4%	27.2%	.0%	20.2%
All Turnkey & SW Companies	122.8	73.8	28.3	1,401	80.6%	72.8%	100.0%	79.8%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 59  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
IBM	8.1	7.6	.5	1,259	16.7%	20.7%	2.8%	17.8%
Autodesk	6.1	.0	6.1	0	12.6%	.0%	37.7%	.0%
Prime Computer	1.9	.3	1.4	17	3.9%	.8%	8.8%	.2%
Racal-Redac	1.3	.0	1.3	0	2.7%	.0%	7.9%	.0%
CADAM	1.1	.0	.9	0	2.2%	.0%	5.7%	.0%
Olivetti	1.0	.5	.4	204	2.1%	1.3%	2.5%	2.9%
Aucotec	.8	.0	.2	390	1.7%	.0%	1.5%	5.5%
Ziegler Instruments GmbH	.6	.0	.6	0	1.2%	.0%	3.5%	.0%
Intergraph	.6	.0	.6	0	1.2%	.0%	3.4%	.0%
Norsk Data	.2	.0	.0	1	.4%	.0%	.0%	.0%
Robocom	.1	.0	.1	0	.2%	.0%	.7%	.0%
Superdraft	.1	.0	.1	0	.2%	.0%	.7%	.0%
Intercad	.1	.1	.0	5	.2%	.2%	.0%	.1%
Daisy Systems	.1	.0	.1	0	.2%	.0%	.5%	.0%
Valid	.1	.0	.0	1	.2%	.1%	.2%	.0%
Westward	.0	.0	.0	43	.1%	.0%	.0%	.6%
CAD Lab	.0	.0	.0	0	.0%	.0%	.1%	.0%
MacNeal-Schwendler	.0	.0	.0	0	.0%	.0%	.1%	.0%
Other Companies	16.3	19.2	2.4	3,527	33.4%	52.3%	14.7%	49.9%
All Companies	48.7	36.8	16.2	7,065	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	44.4	36.2	13.5	6,423	91.2%	98.4%	83.2%	90.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	4.3	.6	2.7	642	8.8%	1.6%	16.8%	9.1%
All Hardware Companies	25.1	31.6	.0	6,179	51.6%	86.0%	.0%	87.5%
All Turnkey & SW Companies	23.6	5.2	16.2	886	48.4%	14.0%	100.0%	12.5%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 60  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
IBM	62.9	45.1	9.0	1,440	33.0%	36.3%	23.0%	23.2%
Prime Computer	41.6	20.7	9.4	367	21.8%	16.6%	23.9%	5.9%
Digital	15.2	11.6	.0	192	8.0%	9.3%	.0%	3.1%
Intergraph	10.0	6.4	1.5	110	5.3%	5.1%	3.9%	1.8%
McDonnell Douglas	5.7	4.1	.4	95	3.0%	3.3%	1.0%	1.5%
Norsk Data	3.2	1.6	.9	14	1.7%	1.2%	2.4%	.2%
Autodesk	2.9	.0	2.9	0	1.5%	.0%	7.4%	.0%
PAFEC	2.8	.0	2.8	0	1.5%	.0%	7.2%	.0%
Schlumberger (Applicon)	2.7	.9	1.0	174	1.4%	.7%	2.5%	2.8%
Control Data	2.5	1.8	.2	17	1.3%	1.4%	.6%	.3%
Dassault	2.4	.0	2.0	0	1.3%	.0%	5.0%	.0%
Apollo	2.0	1.7	.0	88	1.1%	1.4%	.0%	1.4%
Cimlinc	2.0	1.1	.7	102	1.1%	.9%	1.7%	1.6%
Autokon CIM Systems	1.7	.1	1.6	2	.9%	.1%	4.1%	.0%
Matra Datavision	1.5	.8	.5	9	.8%	.7%	1.2%	.1%
Siemens	1.1	.7	.3	24	.6%	.5%	.8%	.4%
Exapt	1.1	.8	.2	16	.6%	.6%	.6%	.3%
SDRC	1.0	.0	1.0	0	.5%	.0%	2.6%	.0%
Sun	.9	.8	.0	41	.5%	.6%	.0%	.7%
Olivetti	.7	.3	.3	121	.4%	.2%	.7%	2.0%
Gerber Systems	.6	.4	.3	10	.3%	.3%	.6%	.2%
Cisigraph	.6	.4	.1	66	.3%	.4%	.2%	1.1%
MacNeal-Schwendler	.6	.0	.6	0	.3%	.0%	1.4%	.0%
Unisys	.5	.3	.2	9	.3%	.2%	.4%	.1%
Ferranti	.3	.2	.0	3	.2%	.2%	.1%	.0%
Westward	.2	.2	.0	53	.1%	.1%	.0%	.9%
Ziegler Instruments GmbH	.2	.0	.2	0	.1%	.0%	.4%	.0%
CAD Lab	.1	.0	.1	0	.1%	.0%	.3%	.0%
Superdraft	.1	.0	.1	0	.1%	.0%	.3%	.0%
ISYKON Software	.1	.1	.0	124	.0%	.0%	.1%	2.0%
Intercad	.1	.1	.0	2	.0%	.0%	.0%	.0%
Robocom	.1	.0	.1	0	.0%	.0%	.1%	.0%

(Continued)

# Market Share

TABLE NUMBER: 60 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Other Companies	16.7	18.7	2.5	1,961	8.8%	15.0%	6.3%	31.6%
All Companies	190.3	124.5	39.1	6,205	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	175.8	119.5	31.5	5,772	92.4%	96.0%	80.5%	93.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	14.5	5.0	7.6	433	7.6%	4.0%	19.5%	7.0%
All Hardware Companies	41.8	42.3	.0	4,101	21.9%	34.0%	.0%	66.1%
All Turnkey & SW Companies	148.5	82.2	39.1	2,105	78.1%	66.0%	100.0%	33.9%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 61  
 TITLE: 1988 Market Share  
 APPLICATION: AEC  
 PLATFORM: All Platforms  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Intergraph	14.1	9.0	2.2	154	27.6%	26.6%	20.9%	7.5%
Prime Computer	7.4	3.7	1.7	85	14.5%	10.9%	16.3%	4.1%
Norsk Data	5.0	2.5	1.5	0	9.8%	7.3%	14.1%	.0%
IBM	4.5	3.8	.4	387	8.9%	11.3%	3.6%	18.9%
Digital	4.2	3.2	.0	52	8.2%	9.4%	.0%	2.6%
McDonnell Douglas	2.3	1.7	.2	33	4.6%	5.0%	1.4%	1.6%
Autodesk	1.8	.0	1.8	0	3.5%	.0%	16.9%	.0%
PAFEC	.7	.0	.7	0	1.4%	.0%	6.6%	.0%
Apollo	.6	.6	.0	28	1.3%	1.7%	.0%	1.4%
Siemens	.4	.2	.1	7	.7%	.7%	1.1%	.3%
Dassault	.3	.0	.3	0	.7%	.0%	2.7%	.0%
Olivetti	.3	.2	.1	55	.6%	.5%	.9%	2.7%
Ziegler Instruments GmbH	.1	.0	.1	0	.2%	.0%	.7%	.0%
Sun	.1	.1	.0	3	.1%	.2%	.0%	.2%
Cimline	.1	.0	.0	3	.1%	.1%	.2%	.2%
Control Data	.1	.1	.0	0	.1%	.1%	.1%	.0%
Robocom	.1	.0	.1	0	.1%	.0%	.5%	.0%
Westward	.0	.0	.0	3	.0%	.0%	.0%	.1%
Other Companies	6.8	7.3	.9	903	13.3%	21.7%	9.0%	44.1%
All Companies	50.9	33.6	10.4	2,050	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	44.1	30.8	7.6	1,986	86.6%	91.5%	73.4%	96.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	6.8	2.9	2.8	64	13.4%	8.5%	26.6%	3.1%
All Hardware Companies	12.0	12.7	.0	1,638	23.6%	37.6%	.0%	79.9%
All Turnkey & SW Companies	38.9	21.0	10.4	412	76.4%	62.4%	100.0%	20.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 62  
 TITLE: 1988 Market Share  
 APPLICATION: Mapping  
 PLATFORM: All Platforms  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----				
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	
Intergraph	6.8	4.4	1.1	75	24.8%	26.4%	13.8%	20.2%	
Sysscan	6.6	3.9	2.6	8	23.9%	23.9%	34.6%	2.2%	
Digital	2.8	2.1	.0	35	10.1%	12.7%	.0%	9.4%	
IBM	2.3	1.7	.3	63	8.5%	10.4%	4.2%	17.1%	
Norsk Data	2.0	1.0	.6	0	7.1%	5.8%	7.6%	.0%	
Prime Computer	.8	.4	.2	7	2.7%	2.4%	2.0%	1.8%	
Autodesk	.7	.0	.7	0	2.4%	.0%	8.8%	.0%	
Siemens	.4	.2	.1	7	1.3%	1.3%	1.4%	1.8%	
McDonnell Douglas	.2	.1	.0	3	.6%	.7%	.1%	.8%	
Sun	.1	.1	.0	3	.2%	.3%	.0%	.7%	
Apollo	.0	.0	.0	2	.1%	.2%	.0%	.6%	
Ziegler Instruments GmbH	.0	.0	.0	0	.1%	.0%	.5%	.0%	
Robocom	.0	.0	.0	0	.0%	.0%	.1%	.0%	
Other Companies	2.4	1.9	.5	132	8.7%	11.7%	6.1%	35.7%	
All Companies	27.5	16.5	7.6	370	100.0%	100.0%	100.0%	100.0%	
All U.S.-Based Companies	18.5	11.4	4.2	355	67.5%	68.9%	55.7%	95.9%	
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%	
All European-Based Companies	8.9	5.1	3.4	15	32.5%	31.1%	44.3%	4.1%	
All Hardware Companies	4.1	3.5	.0	217	14.8%	21.2%	.0%	58.6%	
All Turnkey & SW Companies	23.4	13.0	7.6	153	85.2%	78.8%	100.0%	41.4%	

Source: Dataquest  
 April 1989



# Market Share

TABLE NUMBER: 63  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company	Total				Market Share			
	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Mentor Graphics	6.3	2.1	3.4	121	12.5%	8.3%	18.4%	5.7%
Digital	5.5	4.2	.0	70	11.0%	16.9%	.0%	3.3%
Daisy Systems	5.1	2.3	1.7	40	10.1%	9.3%	9.2%	1.9%
Racal-Redac	3.7	.3	3.0	7	7.3%	1.4%	16.2%	.3%
Prime Computer	3.4	1.7	.8	28	6.8%	6.7%	4.4%	1.3%
Intergraph	2.5	1.6	.4	28	5.0%	6.5%	2.1%	1.3%
Apollo	2.5	2.1	.0	109	4.9%	8.5%	.0%	5.2%
IBM	2.3	1.7	.3	84	4.5%	6.9%	1.5%	4.0%
Valid	2.1	.9	.8	18	4.1%	3.6%	4.4%	.8%
Sun	1.2	1.1	.0	56	2.3%	4.3%	.0%	2.7%
Autodesk	1.1	.0	1.1	0	2.2%	.0%	5.9%	.0%
CADAM	1.1	.0	.9	0	2.1%	.0%	5.0%	.0%
Aucotec	.9	.0	.3	433	1.8%	.0%	1.4%	20.6%
European Silicon Structures	.7	.0	.7	0	1.3%	.0%	3.5%	.0%
Silver-Lisco	.6	.0	.4	0	1.1%	.0%	2.0%	.0%
Scientific Calc.	.5	.2	.2	2	1.0%	.8%	.9%	.1%
Control Data	.3	.2	.0	3	.6%	1.0%	.2%	.1%
Ziegler Instruments GmbH	.3	.0	.3	0	.6%	.0%	1.5%	.0%
Calay	.2	.1	.0	2	.4%	.5%	.2%	.1%
Secmai	.2	.1	.0	2	.4%	.5%	.2%	.1%
Thom 6	.2	.0	.2	0	.3%	.0%	.8%	.0%
Olivetti	.2	.1	.1	33	.3%	.4%	.3%	1.5%
Dassault	.1	.0	.1	0	.2%	.0%	.4%	.0%
Intercad	.1	.0	.0	3	.1%	.2%	.0%	.1%
Plessey Semiconductors	.0	.0	.0	0	.1%	.0%	.2%	.0%
Schlumberger (Applicon)	.0	.0	.0	7	.1%	.0%	.1%	.3%

(Continued)

# Market Share

TABLE NUMBER: 63 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Other Companies	5.6	4.5	1.4	1,078	11.1%	18.2%	7.5%	51.2%
All Companies	50.4	24.9	18.7	2,105	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	44.0	24.2	14.1	1,626	87.3%	97.2%	75.5%	77.2%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	6.4	.7	4.6	479	12.7%	2.8%	24.5%	22.8%
All Hardware Companies	14.5	13.7	.0	1,289	28.7%	55.0%	.0%	61.2%
All Turnkey & SW Companies	35.9	11.2	18.7	816	71.3%	45.0%	100.0%	38.8%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 64  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
Mentor Graphics	4.2	1.4	2.3	100	17.1%	11.3%	25.5%	6.7%
Daisy Systems	2.9	1.2	1.1	25	11.9%	9.6%	11.7%	1.6%
Digital	2.8	2.1	.0	35	11.3%	17.0%	.0%	2.3%
Valid	1.7	.7	.7	17	6.9%	5.9%	7.4%	1.1%
Apollo	1.5	1.3	.0	68	6.3%	10.8%	.0%	4.5%
Prime Computer	1.2	.6	.3	12	4.7%	4.5%	3.2%	.8%
Aucotec	.9	.0	.3	433	3.7%	.0%	2.9%	28.8%
Autodesk	.9	.0	.9	0	3.5%	.0%	9.5%	.0%
Racal-Redac	.7	.1	.6	2	3.0%	.6%	6.6%	.1%
Sun	.7	.6	.0	32	2.7%	4.9%	.0%	2.1%
Intergraph	.3	.2	.0	3	1.1%	1.5%	.4%	.2%
IBM	.2	.2	.0	36	.9%	1.8%	.0%	2.4%
Silvar-Lisco	.2	.0	.2	0	.9%	.0%	1.7%	.0%
Ziegler Instruments GmbH	.2	.0	.2	0	.7%	.0%	1.9%	.0%
Control Data	.2	.1	.0	2	.7%	1.1%	.1%	.2%
Thom 6	.2	.0	.2	0	.6%	.0%	1.7%	.0%
Dassault	.1	.0	.1	0	.4%	.0%	.8%	.0%
Intercad	.0	.0	.0	1	.1%	.2%	.0%	.1%
Secmai	.0	.0	.0	0	.0%	.1%	.0%	.0%
Other Companies	3.3	2.8	.6	904	13.4%	22.9%	6.4%	60.1%
All Companies	24.5	12.3	9.1	1,505	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	22.5	12.2	7.8	1,069	91.4%	99.1%	86.2%	71.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	2.1	.1	1.3	436	8.6%	.9%	13.8%	29.0%
All Hardware Companies	8.1	8.0	.0	853	33.1%	64.6%	.0%	56.7%
All Turnkey & SW Companies	16.5	4.4	9.1	651	66.9%	35.4%	100.0%	43.3%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 65  
 TITLE: 1988 Market Share  
 APPLICATION: IC Layout  
 PLATFORM: All Platforms  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Digital	.8	.6	.0	10	14.7%	29.7%	.0%	15.6%
European Silicon Structures	.7	.0	.7	0	11.5%	.0%	23.6%	.0%
Mentor Graphics	.5	.2	.3	7	8.8%	7.5%	9.8%	10.0%
Apollo	.5	.4	.0	21	8.7%	19.3%	.0%	31.8%
Silvar-Lisco	.3	.0	.2	0	5.8%	.0%	8.0%	.0%
Sun	.3	.3	.0	15	5.7%	13.2%	.0%	22.3%
Intergraph	.3	.2	.1	3	5.3%	8.5%	1.8%	4.9%
Daisy Systems	.2	.1	.1	1	2.8%	2.8%	1.8%	1.0%
Valid	.2	.1	.1	0	2.7%	3.3%	2.2%	.6%
Control Data	.1	.1	.0	0	.9%	2.4%	.4%	.4%
Plessey Semiconductors	.0	.0	.0	0	.7%	.0%	1.1%	.0%
Other Companies	1.0	.3	.7	8	17.0%	12.7%	24.6%	12.0%
All Companies	5.7	2.1	2.8	67	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	5.0	2.1	2.1	67	87.8%	100.0%	75.4%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.7	.0	.7	0	12.2%	.0%	24.6%	.0%
All Hardware Companies	1.9	1.6	.0	55	34.0%	75.5%	.0%	81.9%
All Turnkey & SW Companies	3.7	.5	2.8	12	66.0%	24.5%	100.0%	18.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 66  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: Scandinavia  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
Racal-Redac	3.0	.3	2.4	6	14.6%	2.5%	35.2%	1.0%
Prime Computer	2.3	1.1	.5	16	11.3%	10.7%	7.8%	3.0%
IBM	2.1	1.5	.3	48	10.2%	14.2%	4.2%	9.1%
Daisy Systems	2.0	1.1	.6	15	9.8%	10.3%	8.8%	2.8%
Intergraph	2.0	1.3	.3	21	9.7%	12.0%	4.5%	4.0%
Digital	1.9	1.5	.0	24	9.5%	14.1%	.0%	4.6%
Mentor Graphics	1.6	.5	.9	14	7.8%	5.0%	12.4%	2.6%
CADAM	1.1	.0	.9	0	5.2%	.0%	13.5%	.0%
Scientific Calc.	.5	.2	.2	2	2.6%	1.9%	2.5%	.3%
Apollo	.5	.4	.0	20	2.3%	3.7%	.0%	3.7%
Autodesk	.2	.0	.2	0	1.2%	.0%	3.5%	.0%
Valid	.2	.1	.1	1	1.0%	1.0%	1.3%	.2%
Sun	.2	.2	.0	10	1.0%	1.7%	.0%	1.8%
Calay	.2	.1	.0	2	.9%	1.1%	.6%	.4%
Secmai	.2	.1	.0	1	.8%	1.1%	.4%	.3%
Olivetti	.2	.1	.1	33	.7%	.9%	.7%	6.1%
Ziegler Instruments GmbH	.1	.0	.1	0	.6%	.0%	1.6%	.0%
Control Data	.1	.1	.0	0	.4%	.6%	.1%	.1%
Schlumberger (Applicon)	.0	.0	.0	7	.2%	.1%	.1%	1.4%
Intercad	.0	.0	.0	2	.1%	.2%	.0%	.3%
Other Companies	1.4	1.5	.1	166	6.8%	13.9%	2.0%	31.0%
All Companies	20.1	10.5	6.9	534	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	16.5	9.9	4.3	490	82.1%	94.3%	61.5%	91.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	3.6	.6	2.7	43	17.9%	5.7%	38.5%	8.1%
All Hardware Companies	4.4	4.1	.0	381	21.9%	39.6%	.0%	71.4%
All Turnkey & SW Companies	15.7	6.3	6.9	153	78.1%	60.4%	100.0%	28.6%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 67  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	97.5	59.2	25.5	2,852	14.3%	15.9%	12.5%	21.5%
Prime Computer	95.5	40.9	28.1	874	14.0%	11.0%	13.8%	6.6%
Intergraph	62.7	35.9	13.8	686	9.2%	9.7%	6.8%	5.2%
Digital	46.8	38.9	.0	590	6.9%	10.5%	.0%	4.5%
Hewlett-Packard	42.9	28.8	8.0	2,137	6.3%	7.7%	3.9%	16.1%
McDonnell Douglas	26.2	16.4	4.3	338	3.8%	4.4%	2.1%	2.6%
Apollo	25.0	22.0	.0	1,095	3.7%	5.9%	.0%	8.3%
Daisy Systems	21.5	11.5	6.1	77	3.2%	3.1%	3.0%	.6%
Racal-Redac	21.4	2.0	17.5	42	3.1%	.5%	8.6%	.3%
ICL	16.7	12.5	3.1	304	2.5%	3.4%	1.5%	2.3%
Mentor Graphics	16.3	5.4	8.9	36	2.4%	1.4%	4.4%	.3%
Schlumberger (Applicon)	13.6	4.6	5.0	138	2.0%	1.2%	2.5%	1.0%
PAFEC	13.3	.0	13.3	0	2.0%	.0%	6.6%	.0%
Ferranti	13.1	7.5	3.4	114	1.9%	2.0%	1.7%	.9%
CAD Centre	10.9	2.0	3.8	0	1.6%	.5%	1.9%	.0%
Engineering Computer Services	10.5	4.5	3.5	215	1.5%	1.2%	1.7%	1.6%
Sun	9.9	8.9	.0	472	1.5%	2.4%	.0%	3.6%
Westward	8.7	7.0	1.7	0	1.3%	1.9%	.8%	.0%
T2 Solutions	7.5	4.4	2.0	0	1.1%	1.2%	1.0%	.0%
Autodesk	7.3	.0	7.3	0	1.1%	.0%	3.6%	.0%
Sysscan	5.4	3.2	2.2	0	.8%	.9%	1.1%	.0%
ISICAD	5.2	2.6	1.7	53	.8%	.7%	.8%	.4%
Radan Computational	5.1	2.7	1.4	0	.7%	.7%	.7%	.0%
Valid	5.0	2.1	1.9	43	.7%	.6%	.9%	.3%
Cimline	4.9	2.6	1.6	248	.7%	.7%	.8%	1.9%
SDRC	4.5	.0	4.5	0	.7%	.0%	2.2%	.0%
Scientific Calc.	2.7	.5	1.5	8	.4%	.1%	.7%	.1%
Norsk Data	2.4	1.2	.7	0	.3%	.3%	.4%	.0%
Olivetti	1.8	.8	.8	324	.3%	.2%	.4%	2.5%
Superdraft	1.7	.0	1.5	0	.3%	.0%	.7%	.0%
Dassault	1.7	.0	1.4	0	.2%	.0%	.7%	.0%
MacNeal-Schwendler	1.7	.0	1.6	0	.2%	.0%	.8%	.0%
Robocom	1.7	.0	1.7	0	.2%	.0%	.8%	.0%

(Continued)

# Market Share

TABLE NUMBER: 67  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Matra Datavision	1.5	1.1	.2	13	.2%	.3%	.1%	.1%
Silvar-Lisco	1.4	.0	1.0	0	.2%	.0%	.5%	.0%
Unisys	1.4	.4	.8	22	.2%	.1%	.4%	.2%
European Silicon Structures	1.0	.0	1.0	0	.2%	.0%	.5%	.0%
CADAM	.9	.0	.8	0	.1%	.0%	.4%	.0%
Exapt	.8	.5	.2	12	.1%	.1%	.1%	.1%
Gerber Systems	.7	.4	.3	11	.1%	.1%	.1%	.1%
Siemens	.6	.4	.2	11	.1%	.1%	.1%	.1%
Aucotec	.6	.4	.2	53	.1%	.1%	.1%	.4%
Calay	.5	.1	.3	6	.1%	.0%	.2%	.0%
Plessey Semiconductors	.5	.0	.4	0	.1%	.0%	.2%	.0%
Zycad	.5	.4	.0	0	.1%	.1%	.0%	.0%
Control Data	.4	.2	.1	24	.1%	.1%	.0%	.2%
Intercad	.2	.2	.0	0	.0%	.0%	.0%	.0%
RHV Software Systems	.2	.0	.2	0	.0%	.0%	.1%	.0%
Sycotronic AG	.1	.0	.1	0	.0%	.0%	.1%	.0%
Secmai	.1	.1	.0	1	.0%	.0%	.0%	.0%
ISYKON Software	.1	.0	.0	0	.0%	.0%	.0%	.0%
Synercom	.1	.0	.1	0	.0%	.0%	.0%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.0%	.0%
CAD-UL	.0	.0	.0	1	.0%	.0%	.0%	.0%
Thom 6	.0	.0	.0	0	.0%	.0%	.0%	.0%
Catalpa	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 67 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****
Other Companies	74.7	46.6	19.6	996	10.9%	12.6%	9.6%	7.5%
All Companies	683.2	371.1	203.5	13,238	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	553.7	319.8	141.8	12,134	81.0%	86.2%	69.7%	91.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	129.5	51.3	61.7	1,104	19.0%	13.8%	30.3%	8.3%
All Hardware Companies	129.4	119.2	.0	7,421	18.9%	32.1%	.0%	56.1%
All Turnkey & SW Companies	553.8	251.8	203.5	5,816	81.1%	67.9%	100.0%	43.9%

Source: Dataquest  
 April 1989



# Market Share

TABLE NUMBER: 68  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Prime Computer	59.8	27.8	14.6	659	16.6%	15.1%	13.6%	12.2%
Intergraph	40.8	24.0	8.1	303	11.3%	13.0%	7.6%	5.6%
Hewlett-Packard	36.3	22.2	8.0	842	10.1%	12.0%	7.4%	15.6%
Apollo	22.5	19.8	.0	997	6.3%	10.7%	.0%	18.5%
Daisy Systems	19.3	10.4	5.1	77	5.4%	5.6%	4.8%	1.4%
ICL	16.7	12.5	3.1	304	4.7%	6.8%	2.9%	5.6%
Digital	16.4	13.6	.0	590	4.6%	7.4%	.0%	10.9%
Mentor Graphics	16.3	5.4	8.9	36	4.5%	2.9%	8.3%	.7%
Racal-Redac	13.9	2.0	10.1	42	3.9%	1.1%	9.3%	.8%
PAFEC	11.3	.0	11.3	0	3.1%	.0%	10.5%	.0%
CAD Centre	10.9	2.0	3.8	0	3.0%	1.1%	3.5%	.0%
Schlumberger (Applicon)	9.2	3.1	3.4	125	2.6%	1.7%	3.2%	2.3%
McDonnell Douglas	8.4	5.3	1.4	144	2.3%	2.9%	1.3%	2.7%
Sun	8.4	7.6	.0	424	2.3%	4.1%	.0%	7.9%
Engineering Computer Services	5.3	2.3	1.7	57	1.5%	1.2%	1.6%	1.0%
Radan Computational	5.1	2.7	1.4	0	1.4%	1.5%	1.3%	.0%
T2 Solutions	4.9	2.7	1.5	0	1.4%	1.5%	1.4%	.0%
Valid	4.8	2.1	1.9	40	1.3%	1.1%	1.7%	.7%
ISICAD	4.7	2.6	1.2	53	1.3%	1.4%	1.1%	1.0%
Cimline	4.6	2.4	1.6	232	1.3%	1.3%	1.5%	4.3%
IBM	4.3	3.1	.5	91	1.2%	1.7%	.5%	1.7%
SDRC	3.0	.0	3.0	0	.8%	.0%	2.8%	.0%
Scientific Calc.	1.8	.4	.9	8	.5%	.2%	.8%	.1%
Silver-Lisco	1.2	.0	.8	0	.3%	.0%	.7%	.0%
Unisys	1.1	.3	.6	13	.3%	.2%	.6%	.2%
Norsk Data	1.0	.5	.3	0	.3%	.3%	.3%	.0%
European Silicon Structures	.8	.0	.8	0	.2%	.0%	.8%	.0%
Gerber Systems	.7	.4	.3	11	.2%	.2%	.3%	.2%
Calay	.5	.1	.3	6	.2%	.1%	.3%	.1%
Siemens	.4	.3	.1	10	.1%	.1%	.1%	.2%
Plessey Semiconductors	.4	.0	.3	0	.1%	.0%	.3%	.0%
Autodesk	.4	.0	.4	0	.1%	.0%	.3%	.0%

(Continued)

# Market Share

TABLE NUMBER: 68 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Ferranti	.4	.2	.1	5	.1%	.1%	.1%	.1%
Dassault	.3	.0	.3	0	.1%	.0%	.3%	.0%
Exapt	.2	.1	.1	4	.1%	.1%	.1%	.1%
MacNeal-Schwendler	.2	.0	.2	0	.0%	.0%	.1%	.0%
Control Data	.1	.1	.0	2	.0%	.0%	.0%	.0%
Secmai	.1	.1	.0	1	.0%	.0%	.0%	.0%
ISYKON Software	.1	.0	.0	0	.0%	.0%	.0%	.0%
Aucotec	.0	.0	.0	3	.0%	.0%	.0%	.0%
Catalpa	.0	.0	.0	0	.0%	.0%	.0%	.0%
Thom 6	.0	.0	.0	0	.0%	.0%	.0%	.0%
Zycad	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	34.2	14.3	11.2	206	9.5%	7.8%	10.5%	3.8%
All Companies	359.3	184.4	107.5	5,391	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	286.0	158.5	71.6	4,952	79.6%	86.0%	66.6%	91.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	73.4	25.9	35.9	439	20.4%	14.0%	33.4%	8.1%
All Hardware Companies	50.7	44.1	.0	2,197	14.1%	23.9%	.0%	40.8%
All Turnkey & SW Companies	308.6	140.3	107.5	3,194	85.9%	76.1%	100.0%	59.2%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 69  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company	Total				Market Share			
	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	81.1	44.6	24.3	866	31.7%	29.1%	37.9%	33.6%
Prime Computer	32.3	12.6	10.9	184	12.6%	8.2%	16.9%	7.1%
Digital	30.4	25.3	.0	0	11.9%	16.5%	.0%	.0%
Intergraph	20.8	11.9	4.6	384	8.1%	7.7%	7.1%	14.9%
McDonnell Douglas	17.7	11.1	2.9	194	6.9%	7.2%	4.5%	7.5%
Ferranti	12.8	7.4	3.3	109	5.0%	4.8%	5.1%	4.2%
Westward	7.0	5.6	1.4	0	2.7%	3.7%	2.1%	.0%
Sysscan	5.4	3.2	2.2	0	2.1%	2.1%	3.3%	.0%
Schlumberger (Applicon)	4.4	1.5	1.6	13	1.7%	1.0%	2.5%	.5%
T2 Solutions	2.6	1.7	.5	0	1.0%	1.1%	.8%	.0%
Apollo	2.5	2.2	.0	98	1.0%	1.4%	.0%	3.8%
PAFEC	2.1	.0	2.1	0	.8%	.0%	3.2%	.0%
Daisy Systems	1.8	1.1	.5	0	.7%	.7%	.7%	.0%
Matra Datavision	1.5	1.1	.2	13	.6%	.7%	.2%	.5%
Sun	1.5	1.4	.0	48	.6%	.9%	.0%	1.8%
MacNeal-Schwendler	1.5	.0	1.4	0	.6%	.0%	2.2%	.0%
SDRC	1.4	.0	1.4	0	.6%	.0%	2.2%	.0%
Norsk Data	1.4	.7	.4	0	.5%	.5%	.6%	.0%
Dassault	1.3	.0	1.1	0	.5%	.0%	1.7%	.0%
Scientific Calc.	1.0	.1	.6	0	.4%	.0%	.9%	.0%
Exapt	.6	.4	.1	8	.2%	.3%	.1%	.3%
Zycad	.5	.4	.0	0	.2%	.3%	.0%	.0%
Unisys	.4	.1	.2	9	.1%	.1%	.3%	.4%
Control Data	.3	.2	.0	22	.1%	.1%	.0%	.9%
Silver-Lisco	.3	.0	.2	0	.1%	.0%	.3%	.0%
Cimlinc	.2	.2	.0	15	.1%	.2%	.0%	.6%
Olivetti	.2	.1	.1	12	.1%	.1%	.1%	.5%
Siemens	.1	.1	.0	1	.1%	.1%	.1%	.0%
Plessey Semiconductors	.1	.0	.1	0	.0%	.0%	.1%	.0%
Synercom	.1	.0	.1	0	.0%	.0%	.1%	.0%
Aucotec	.0	.0	.0	3	.0%	.0%	.0%	.1%
ISYKON Software	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 69 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Thom 6	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	28.6	27.9	2.3	577	11.2%	18.2%	3.5%	22.4%
All Companies	256.2	153.3	64.2	2,580	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	220.8	132.8	52.6	2,434	86.2%	86.6%	82.0%	94.4%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	35.4	20.5	11.6	146	13.8%	13.4%	18.0%	5.6%
All Hardware Companies	52.4	48.9	.0	711	20.5%	31.9%	.0%	27.6%
All Turnkey & SW Companies	203.8	104.4	64.2	1,869	79.5%	68.1%	100.0%	72.4%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 70  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
IBM	12.1	11.4	.6	1,895	17.9%	34.2%	1.9%	36.0%
Racal-Redac	7.5	.0	7.5	0	11.0%	.0%	23.5%	.0%
Autodesk	7.0	.0	7.0	0	10.3%	.0%	21.8%	.0%
Hewlett-Packard	6.6	6.6	.0	1,295	9.7%	19.7%	.0%	24.6%
Engineering Computer Services	5.3	2.3	1.7	158	7.8%	6.8%	5.4%	3.0%
Prime Computer	3.5	.5	2.6	31	5.2%	1.6%	8.2%	.6%
Westward	1.7	1.3	.3	0	2.6%	4.0%	1.1%	.0%
Superdraft	1.7	.0	1.5	0	2.5%	.1%	4.8%	.0%
Robocom	1.7	.0	1.7	0	2.5%	.0%	5.2%	.0%
Olivetti	1.6	.7	.7	313	2.4%	2.1%	2.2%	5.9%
Intergraph	1.1	.0	1.0	0	1.7%	.0%	3.3%	.0%
CADAM	.9	.0	.8	0	1.3%	.0%	2.5%	.0%
ISICAD	.5	.0	.5	0	.8%	.0%	1.6%	.0%
Aucotec	.5	.4	.2	47	.7%	1.2%	.6%	.9%
Daisy Systems	.4	.1	.5	0	.6%	.3%	1.5%	.0%
European Silicon Structures	.2	.0	.2	0	.3%	.0%	.7%	.0%
Valid	.2	.1	.1	3	.3%	.2%	.2%	.1%
Intercad	.2	.2	.0	0	.3%	.4%	.0%	.0%
RHV Software Systems	.2	.0	.2	0	.2%	.0%	.5%	.0%
Sycotronic AG	.1	.0	.1	0	.2%	.0%	.4%	.0%
Norsk Data	.1	.0	.0	0	.1%	.1%	.1%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.1%	.0%	.1%	.0%
CAD-UL	.0	.0	.0	1	.0%	.0%	.1%	.0%
MacNeal-Schwendler	.0	.0	.0	0	.0%	.0%	.1%	.0%
Plessey Semiconductors	.0	.0	.0	0	.0%	.0%	.1%	.0%

(Continued)

# Market Share

TABLE NUMBER: 70 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company =====					----- Market Share -----			
	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====	Total Revenue =====	Hardware Revenue =====	Software Revenue =====	Wkstns Shipped =====
Other Companies	11.9	4.3	6.1	213	17.6%	12.9%	19.2%	4.0%
All Companies	67.7	33.5	31.8	5,266	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	46.9	28.5	17.6	4,747	69.3%	85.3%	55.3%	90.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	20.8	4.9	14.2	519	30.7%	14.7%	44.7%	9.9%
All Hardware Companies	26.3	26.3	.0	4,513	38.8%	78.5%	.0%	85.7%
All Turnkey & SW Companies	41.4	7.2	31.8	753	61.2%	21.5%	100.0%	14.3%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 71  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****
IBM	84.7	50.2	22.9	2,065	21.3%	22.5%	20.6%	25.3%
Prime Computer	75.5	32.1	22.3	668	19.0%	14.4%	20.1%	8.2%
Hewlett-Packard	26.6	17.5	5.2	1,116	6.7%	7.8%	4.7%	13.7%
Digital	25.8	21.4	.0	325	6.5%	9.6%	.0%	4.0%
Intergraph	18.8	10.8	4.1	206	4.7%	4.8%	3.7%	2.5%
McDonnell Douglas	18.2	11.4	3.0	304	4.6%	5.1%	2.7%	3.7%
Schlumberger (Applicon)	13.4	4.6	5.0	137	3.4%	2.0%	4.5%	1.7%
Ferranti	13.1	7.5	3.4	114	3.3%	3.4%	3.1%	1.4%
PAFEC	10.7	.0	10.7	0	2.7%	.0%	9.6%	.0%
Engineering Computer Services	10.5	4.5	3.5	215	2.6%	2.0%	3.1%	2.6%
Apollo	9.5	8.3	.0	415	2.4%	3.7%	.0%	5.1%
Westward	8.3	6.6	1.6	0	2.1%	3.0%	1.5%	.0%
ICL	7.8	5.8	1.5	142	2.0%	2.6%	1.3%	1.7%
Cimline	4.7	2.6	1.6	240	1.2%	1.1%	1.4%	2.9%
SDRC	4.5	.0	4.5	0	1.1%	.0%	4.0%	.0%
Radan Computational	4.3	2.3	1.2	0	1.1%	1.0%	1.1%	.0%
Sun	4.2	3.8	.0	200	1.1%	1.7%	.0%	2.4%
ISICAD	4.1	2.1	1.4	42	1.0%	.9%	1.2%	.5%
Autodesk	3.4	.0	3.4	0	.8%	.0%	3.0%	.0%
CAD Centre	3.4	.6	1.1	0	.8%	.3%	1.0%	.0%
Norsk Data	2.4	1.2	.7	0	.6%	.5%	.6%	.0%
Superdraft	1.7	.0	1.5	0	.4%	.0%	1.4%	.0%
MacNeal-Schwendler	1.7	.0	1.6	0	.4%	.0%	1.4%	.0%
Matra Datavision	1.5	1.1	.2	13	.4%	.5%	.1%	.2%
Olivetti	1.5	.6	.7	267	.4%	.3%	.6%	3.3%
Dassault	1.4	.0	1.2	0	.4%	.0%	1.1%	.0%
Unisys	1.4	.4	.8	22	.4%	.2%	.7%	.3%
Exapt	.8	.5	.2	12	.2%	.2%	.2%	.2%
Robocom	.8	.0	.8	0	.2%	.0%	.7%	.0%
Gerber Systems	.7	.4	.3	11	.2%	.2%	.3%	.1%
Control Data	.4	.2	.1	22	.1%	.1%	.0%	.3%
RHV Software Systems	.1	.0	.1	0	.0%	.0%	.1%	.0%

(Continued)

# Market Share

TABLE NUMBER: 71 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Intercad	.1	.1	.0	0	.0%	.0%	.0%	.0%
ISYKON Software	.1	.0	.0	0	.0%	.0%	.0%	.0%
Catalpa	.0	.0	.0	0	.0%	.0%	.0%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	45.4	31.5	10.9	681	11.4%	14.1%	9.8%	8.4%
All Companies	397.5	222.9	110.9	8,156	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	327.7	191.2	81.8	7,385	82.4%	85.8%	73.7%	90.5%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	69.9	31.7	29.1	771	17.6%	14.2%	26.3%	9.5%
All Hardware Companies	70.9	67.0	.0	4,144	17.8%	30.1%	.0%	50.8%
All Turnkey & SW Companies	326.6	155.8	110.9	4,012	82.2%	69.9%	100.0%	49.2%

Source: Dataquest  
 April 1989



# Market Share

TABLE NUMBER: 72  
 TITLE: 1988 Market Share  
 APPLICATION: AEC  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Intergraph	26.3	15.1	5.8	288	26.4%	27.5%	22.4%	13.7%
Prime Computer	12.9	5.6	3.8	148	12.9%	10.2%	14.6%	7.0%
CAD Centre	7.5	1.3	2.7	0	7.6%	2.4%	10.3%	.0%
T2 Solutions	7.5	4.4	2.0	0	7.5%	8.1%	7.7%	.0%
McDonnell Douglas	7.4	4.7	1.2	26	7.5%	8.5%	4.7%	1.2%
Digital	7.0	5.8	.0	88	7.0%	10.6%	.0%	4.2%
Hewlett-Packard	6.5	4.7	1.0	482	6.6%	8.6%	4.0%	22.8%
IBM	6.5	5.0	1.0	576	6.5%	9.2%	3.7%	27.3%
Apollo	3.0	2.6	.0	131	3.0%	4.8%	.0%	6.2%
PAFEC	2.7	.0	2.7	0	2.7%	.0%	10.3%	.0%
Autodesk	2.5	.0	2.5	0	2.5%	.0%	9.6%	.0%
ISICAD	1.1	.5	.4	11	1.1%	1.0%	1.4%	.5%
Radan Computational	.8	.4	.2	0	.8%	.7%	.9%	.0%
Robocom	.7	.0	.7	0	.7%	.0%	2.8%	.0%
Westward	.4	.4	.1	0	.4%	.6%	.3%	.0%
Sun	.4	.3	.0	17	.4%	.6%	.0%	.8%
Siemens	.3	.2	.1	5	.3%	.3%	.3%	.3%
Dassault	.2	.0	.2	0	.2%	.0%	.6%	.0%
Cimlinc	.2	.1	.1	7	.2%	.1%	.2%	.3%
Olivetti	.1	.0	.0	10	.1%	.1%	.1%	.5%
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	18.8	8.3	5.7	56	18.9%	15.1%	22.0%	2.7%
All Companies	99.6	54.8	25.8	2,109	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	79.4	48.1	17.2	2,094	79.7%	87.7%	66.6%	99.3%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	20.2	6.7	8.6	15	20.3%	12.3%	33.4%	.7%
All Hardware Companies	18.7	17.1	.0	1,448	18.8%	31.1%	.0%	68.7%
All Turnkey & SW Companies	80.9	37.8	25.8	661	81.2%	68.9%	100.0%	31.3%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 73  
 TITLE: 1988 Market Share  
 APPLICATION: Mapping  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Intergraph	12.8	7.3	2.8	140	31.1%	29.1%	27.2%	24.1%
ICL	7.8	5.8	1.5	142	19.0%	23.1%	14.0%	24.4%
Sysscan	5.4	3.2	2.2	0	13.0%	12.8%	20.8%	.0%
Digital	4.7	3.9	.0	59	11.4%	15.4%	.0%	10.1%
IBM	3.1	1.9	.8	87	7.5%	7.4%	7.8%	15.0%
Prime Computer	1.2	.6	.3	10	2.8%	2.2%	2.7%	1.7%
Autodesk	.5	.0	.5	0	1.3%	.0%	5.0%	.0%
McDonnell Douglas	.5	.3	.1	8	1.3%	1.3%	.9%	1.3%
Siemens	.3	.2	.1	5	.7%	.7%	.9%	.9%
Apollo	.3	.2	.0	12	.7%	.9%	.0%	2.0%
Sun	.3	.2	.0	13	.7%	1.0%	.0%	2.2%
Olivetti	.1	.1	.0	18	.3%	.2%	.3%	3.1%
Robocom	.1	.0	.1	0	.2%	.0%	.8%	.0%
Synercom	.1	.0	.1	0	.2%	.0%	.6%	.0%
Sycotronic AG	.0	.0	.0	0	.0%	.0%	.1%	.0%
Other Companies	1.1	.9	.1	58	2.6%	3.7%	.9%	9.9%
All Companies	41.1	25.2	10.3	582	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	27.5	15.9	6.5	417	66.8%	63.2%	63.1%	71.5%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	13.7	9.3	3.8	166	33.2%	36.8%	36.9%	28.5%
All Hardware Companies	6.6	5.7	.0	205	16.0%	22.5%	.0%	35.3%
All Turnkey & SW Companies	34.6	19.5	10.3	377	84.0%	77.5%	100.0%	64.7%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 74  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Daisy Systems	21.5	11.5	6.1	77	14.9%	16.9%	10.8%	3.2%
Racal-Redac	21.4	2.0	17.5	42	14.7%	2.9%	31.0%	1.7%
Mentor Graphics	16.3	5.4	8.9	36	11.2%	7.9%	15.8%	1.5%
Apollo	12.3	10.8	.0	538	8.5%	15.8%	.0%	22.5%
Hewlett-Packard	9.8	6.6	1.8	539	6.7%	9.6%	3.2%	22.6%
Digital	9.4	7.8	.0	118	6.5%	11.4%	.0%	4.9%
Prime Computer	6.0	2.6	1.7	48	4.1%	3.8%	3.1%	2.0%
Sun	5.1	4.6	.0	243	3.5%	6.7%	.0%	10.2%
Valid	5.0	2.1	1.9	43	3.4%	3.1%	3.4%	1.8%
Intergraph	4.8	2.7	1.1	52	3.3%	4.0%	1.9%	2.2%
IBM	3.3	2.1	.8	123	2.3%	3.1%	1.5%	5.2%
Scientific Calc.	2.7	.5	1.5	8	1.9%	.7%	2.6%	.3%
Silver-Lisco	1.4	.0	1.0	0	1.0%	.0%	1.7%	.0%
ICL	1.1	.8	.2	20	.8%	1.2%	.4%	.8%
European Silicon Structures	1.0	.0	1.0	0	.7%	.0%	1.8%	.0%
Autodesk	.9	.0	.9	0	.6%	.0%	1.7%	.0%
CADAM	.9	.0	.8	0	.6%	.0%	1.4%	.0%
Aucotec	.6	.4	.2	53	.4%	.6%	.4%	2.2%
Calay	.5	.1	.3	6	.4%	.2%	.6%	.3%
Plessey Semiconductors	.5	.0	.4	0	.4%	.0%	.8%	.0%
Zycad	.5	.4	.0	0	.3%	.6%	.0%	.0%
Schlumberger (Applicon)	.2	.1	.1	1	.2%	.1%	.2%	.0%
Olivetti	.2	.1	.1	30	.1%	.1%	.1%	1.3%
Sycotronic AG	.1	.0	.1	0	.1%	.0%	.2%	.0%
Intercad	.1	.1	.0	0	.1%	.1%	.0%	.0%
Secmai	.1	.1	.0	1	.1%	.1%	.0%	.0%
Robocom	.1	.0	.1	0	.1%	.0%	.1%	.0%
Dassault	.1	.0	.0	0	.0%	.0%	.1%	.0%
CAD-UL	.0	.0	.0	1	.0%	.0%	.1%	.0%
Thom 6	.0	.0	.0	0	.0%	.0%	.0%	.0%
Control Data	.0	.0	.0	1	.0%	.0%	.0%	.1%
RHV Software Systems	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 74 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	9.4	5.9	2.9	201	6.5%	8.6%	5.2%	8.4%
All Companies	145.0	68.2	56.5	2,390	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	119.2	64.6	36.4	2,238	82.2%	94.7%	64.3%	93.6%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	25.8	3.6	20.2	152	17.8%	5.3%	35.7%	6.4%
All Hardware Companies	33.2	29.5	.0	1,624	22.9%	43.2%	.0%	67.9%
All Turnkey & SW Companies	111.8	38.7	56.5	767	77.1%	56.8%	100.0%	32.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 75  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Daisy Systems	11.8	5.9	3.3	25	18.3%	18.0%	14.6%	2.1%
Mentor Graphics	10.8	3.6	5.9	0	16.8%	10.9%	26.6%	.0%
Apollo	7.7	6.8	.0	338	11.9%	20.7%	.0%	28.1%
Digital	4.7	3.9	.0	59	7.3%	11.9%	.0%	4.9%
Hewlett-Packard	4.6	3.1	.8	301	7.1%	9.6%	3.6%	25.1%
Racal-Redac	4.2	.4	3.4	9	6.6%	1.3%	15.4%	.8%
Valid	4.1	1.8	1.6	40	6.3%	5.4%	7.1%	3.3%
Sun	2.9	2.6	.0	138	4.5%	8.0%	.0%	11.5%
Prime Computer	1.8	.8	.5	19	2.8%	2.4%	2.4%	1.6%
Autodesk	.7	.0	.7	0	1.0%	.0%	2.9%	.0%
Silver-Lisco	.6	.0	.4	0	.9%	.0%	1.7%	.0%
Aucotec	.6	.4	.2	53	.9%	1.3%	1.0%	4.4%
Intergraph	.5	.3	.1	6	.8%	.9%	.5%	.5%
Zycad	.5	.4	.0	0	.8%	1.3%	.0%	.0%
IBM	.3	.3	.0	52	.5%	.9%	.0%	4.3%
Dassault	.1	.0	.0	0	.1%	.0%	.2%	.0%
Robocom	.1	.0	.1	0	.1%	.0%	.2%	.0%
Intercad	.0	.0	.0	0	.1%	.1%	.0%	.0%
Thom 6	.0	.0	.0	0	.0%	.0%	.1%	.0%
RHV Software Systems	.0	.0	.0	0	.0%	.0%	.1%	.0%
Control Data	.0	.0	.0	0	.0%	.0%	.0%	.0%
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)

# Market Share

TABLE NUMBER: 75 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****
Other Companies	2.1	1.7	.4	95	3.3%	5.3%	1.6%	7.9%
All Companies	64.5	32.8	22.3	1,200	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	59.6	31.9	18.5	1,137	92.3%	97.3%	83.0%	94.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	5.0	.9	3.8	62	7.7%	2.7%	17.0%	5.2%
All Hardware Companies	18.4	16.3	.0	901	28.4%	49.7%	.0%	75.1%
All Turnkey & SW Companies	46.2	16.5	22.3	299	71.6%	50.3%	100.0%	24.9%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 76  
 TITLE: 1988 Market Share  
 APPLICATION: IC Layout  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
Apollo	2.2	1.9	.0	96	15.3%	30.7%	.0%	44.6%
Digital	1.4	1.2	.0	18	9.8%	18.7%	.0%	8.3%
Mentor Graphics	1.3	.4	.7	0	9.2%	7.0%	11.5%	.0%
Sun	1.2	1.1	.0	58	8.5%	17.7%	.0%	27.1%
European Silicon Structures	1.0	.0	1.0	0	7.2%	.0%	16.6%	.0%
Silvar-Lisco	.8	.0	.6	0	5.9%	.0%	9.1%	.0%
Daisy Systems	.6	.3	.2	1	4.3%	4.8%	2.7%	.5%
Intergraph	.6	.3	.1	6	4.0%	5.1%	2.1%	2.9%
Plessey Semiconductors	.5	.0	.4	0	3.7%	.0%	7.0%	.0%
Hewlett-Packard	.4	.3	.1	18	2.8%	4.5%	1.3%	8.3%
Valid	.4	.2	.1	1	2.6%	2.4%	2.2%	.5%
Other Companies	2.1	.5	1.5	15	14.4%	8.3%	23.6%	7.1%
All Companies	14.4	6.3	6.3	215	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	12.8	6.2	4.8	215	89.1%	98.9%	76.4%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.6	.1	1.5	0	10.9%	1.1%	23.6%	.0%
All Hardware Companies	5.4	4.7	.0	200	37.4%	75.2%	.0%	92.9%
All Turnkey & SW Companies	9.0	1.6	6.3	15	62.6%	24.8%	100.0%	7.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 77  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Racal-Redac	17.1	1.5	14.1	32	25.9%	5.3%	50.4%	3.3%
Daisy Systems	9.1	5.4	2.7	51	13.8%	18.3%	9.5%	5.2%
Hewlett-Packard	4.8	3.2	.9	220	7.2%	10.8%	3.3%	22.5%
Prime Computer	4.2	1.8	1.2	29	6.3%	6.2%	4.3%	3.0%
Mentor Graphics	4.1	1.4	2.3	36	6.2%	4.7%	8.1%	3.7%
Intergraph	3.7	2.1	.8	41	5.6%	7.3%	2.9%	4.2%
Digital	3.3	2.7	.0	41	5.0%	9.3%	.0%	4.2%
IBM	3.0	1.8	.8	72	4.6%	6.1%	2.9%	7.3%
Scientific Calc.	2.7	.5	1.5	8	4.1%	1.6%	5.3%	.8%
Apollo	2.4	2.1	.0	104	3.6%	7.2%	.0%	10.7%
ICL	1.1	.8	.2	20	1.7%	2.8%	.7%	2.0%
Sun	1.0	.9	.0	46	1.5%	3.0%	.0%	4.7%
CADAM	.9	.0	.8	0	1.3%	.0%	2.8%	.0%
Calay	.5	.1	.3	6	.8%	.4%	1.2%	.7%
Valid	.5	.2	.2	2	.8%	.8%	.7%	.2%
Autodesk	.3	.0	.3	0	.4%	.0%	1.0%	.0%
Schlumberger (Applicon)	.2	.1	.1	1	.3%	.2%	.3%	.1%
Olivetti	.2	.1	.1	30	.2%	.2%	.2%	3.1%
Sycotronic AG	.1	.0	.1	0	.2%	.0%	.4%	.0%
Secmai	.1	.1	.0	1	.1%	.2%	.1%	.1%
Intercad	.1	.1	.0	0	.1%	.2%	.0%	.0%
CAD-UL	.0	.0	.0	1	.0%	.0%	.1%	.1%
Robocom	.0	.0	.0	0	.0%	.0%	.1%	.0%
Control Data	.0	.0	.0	1	.0%	.0%	.0%	.1%
Ziegler Instruments GmbH	.0	.0	.0	0	.0%	.0%	.0%	.0%

(Continued)



# Market Share

TABLE NUMBER: 77 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: United Kingdom  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****
Other Companies	5.3	3.6	1.1	91	7.9%	12.4%	3.9%	9.3%
All Companies	66.1	29.2	27.9	976	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	46.8	26.5	13.1	886	70.9%	90.9%	46.7%	90.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	19.3	2.7	14.9	90	29.1%	9.1%	53.3%	9.2%
All Hardware Companies	9.5	8.5	.0	523	14.4%	29.0%	.0%	53.6%
All Turnkey & SW Companies	56.6	20.7	27.9	453	85.6%	71.0%	100.0%	46.4%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 78  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	11.7	7.1	3.1	336	12.8%	13.2%	11.9%	14.8%
Intergraph	11.1	6.8	2.0	121	12.1%	12.7%	7.7%	5.3%
Prime Computer	10.4	5.0	2.4	96	11.4%	9.4%	9.4%	4.2%
Silicon Graphics	8.7	7.9	.0	0	9.5%	14.7%	.0%	.0%
Digital	4.3	3.2	.0	54	4.6%	6.0%	.0%	2.4%
Control Data	4.0	2.9	.4	41	4.3%	5.3%	1.5%	1.8%
Autodesk	3.6	.0	3.6	0	3.9%	.0%	13.8%	.0%
Cimatron	3.3	1.7	1.4	73	3.6%	3.1%	5.2%	3.2%
Daisy Systems	3.0	1.5	.8	30	3.3%	2.7%	3.2%	1.3%
Schlumberger (Applicon)	2.7	1.7	.3	38	3.0%	3.1%	1.0%	1.7%
STI-Strassle	1.7	1.4	.3	3	1.9%	2.6%	1.3%	.1%
Siemens	1.5	.9	.4	28	1.6%	1.6%	1.7%	1.2%
Autokon CIM Systems	1.3	.1	1.2	2	1.4%	.2%	4.7%	.1%
Olivetti	1.2	.5	.4	198	1.3%	.9%	1.7%	8.7%
Apollo	.9	.8	.0	40	1.0%	1.5%	.0%	1.8%
Dassault	.8	.0	.7	0	.9%	.0%	2.7%	.0%
MacNeal-Schwendler	.8	.0	.7	0	.8%	.0%	2.7%	.0%
CAD-UL	.7	.2	.5	20	.8%	.4%	1.8%	.9%
Ziegler Instruments GmbH	.7	.0	.7	0	.8%	.0%	2.6%	.0%
Sysscan	.6	.4	.1	0	.7%	.7%	.2%	.0%
CADAM	.6	.0	.5	0	.6%	.0%	2.0%	.0%
Matra Datavision	.5	.4	.1	4	.5%	.7%	.2%	.2%
Unisys	.5	.1	.3	9	.5%	.2%	1.1%	.4%
Silver-Lisco	.5	.0	.3	0	.5%	.0%	1.2%	.0%
Ferranti	.4	.3	.1	4	.5%	.5%	.4%	.2%
European Silicon Structures	.4	.0	.4	0	.4%	.0%	1.6%	.0%
Sun	.4	.3	.0	17	.4%	.6%	.0%	.8%
Gerber Systems	.3	.2	.1	5	.3%	.4%	.5%	.2%
PAFEC	.3	.0	.3	0	.3%	.0%	1.2%	.0%
Robocom	.3	.0	.3	0	.3%	.0%	1.1%	.0%
Secmai	.3	.2	.0	2	.3%	.3%	.2%	.1%
Logotec	.3	.2	.1	2	.3%	.3%	.3%	.1%

(Continued)

# Market Share

TABLE NUMBER: 78 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: All Platforms  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
*****	*****	*****	*****	*****	*****	*****	*****	*****
Technische Computer Systeme	.2	.1	.2	40	.2%	.1%	.6%	1.8%
RHV Software Systems	.2	.0	.2	0	.2%	.0%	.6%	.0%
Zycad	.2	.0	.1	0	.2%	.0%	.5%	.0%
McDonnell Douglas	.2	.1	.0	4	.2%	.2%	.1%	.2%
T2 Solutions	.2	.1	.0	0	.2%	.2%	.2%	.0%
SDRC	.1	.0	.1	0	.1%	.0%	.5%	.0%
Vision 3D	.1	.1	.0	2	.1%	.2%	.1%	.1%
Interced	.1	.1	.0	5	.1%	.2%	.0%	.2%
Calay	.1	.1	.0	1	.1%	.1%	.1%	.0%
Synercom	.1	.0	.1	0	.1%	.0%	.2%	.0%
Thom 6	.1	.0	.0	0	.1%	.0%	.2%	.0%
Catalpa	.0	.0	.0	1	.0%	.0%	.0%	.1%
DECAD	.0	.0	.0	0	.0%	.0%	.0%	.0%
Other Companies	13.8	9.3	5.4	826	15.1%	17.3%	20.8%	36.3%
All Companies	91.5	53.6	26.0	2,275	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	77.5	47.3	19.7	1,895	84.7%	88.1%	75.9%	83.3%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	14.0	6.4	6.3	380	15.3%	11.9%	24.1%	16.7%
All Hardware Companies	23.1	22.5	.0	1,377	25.2%	41.9%	.0%	60.5%
All Turnkey & SW Companies	68.4	31.2	26.0	898	74.8%	58.1%	100.0%	39.5%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 79  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Silicon Graphics	8.7	7.9	.0	0	19.4%	28.8%	.0%	.0%
Intergraph	7.2	4.7	1.0	53	16.1%	17.2%	10.2%	10.8%
Prime Computer	5.8	3.1	1.0	65	13.1%	11.4%	10.2%	13.1%
Daisy Systems	3.0	1.5	.8	30	6.8%	5.3%	8.2%	6.2%
Cimatron	3.0	1.4	1.3	65	6.7%	5.0%	13.2%	13.2%
Schlumberger (Applicon)	1.8	1.1	.2	25	4.1%	4.1%	1.9%	5.1%
Digital	1.5	1.0	.0	54	3.3%	3.5%	.0%	10.9%
STI-Strassle	1.3	1.1	.3	2	3.0%	3.8%	2.6%	.3%
Autokon CIM Systems	1.3	.1	1.2	2	2.9%	.3%	12.1%	.4%
Siemens	1.1	.7	.3	25	2.5%	2.4%	3.3%	5.0%
Control Data	1.1	.8	.0	17	2.4%	3.0%	.3%	3.4%
Apollo	.8	.7	.0	36	1.8%	2.5%	.0%	7.3%
IBM	.5	.4	.1	11	1.2%	1.4%	.7%	2.2%
Silvar-Lisco	.4	.0	.3	0	.8%	.0%	2.5%	.0%
Unisys	.4	.1	.2	6	.8%	.4%	2.2%	1.3%
European Silicon Structures	.3	.0	.3	0	.7%	.0%	3.3%	.0%
Gerber Systems	.3	.2	.1	5	.7%	.7%	1.3%	1.0%
Sun	.3	.3	.0	16	.7%	1.0%	.0%	3.2%
PAFEC	.3	.0	.3	0	.6%	.0%	2.7%	.0%
Secmai	.3	.2	.0	2	.6%	.7%	.4%	.4%
Technische Computer Systeme	.2	.1	.2	40	.5%	.2%	1.5%	8.1%
Autodesk	.2	.0	.2	0	.4%	.0%	1.8%	.0%
Dassault	.2	.0	.1	0	.4%	.0%	1.4%	.0%
Calay	.1	.1	.0	1	.2%	.2%	.2%	.2%
MacNeal-Schwendler	.1	.0	.1	0	.2%	.0%	.7%	.0%
SDRC	.1	.0	.1	0	.2%	.0%	.8%	.0%
McDonnell Douglas	.1	.0	.0	1	.1%	.1%	.0%	.2%
Thom 6	.0	.0	.0	0	.1%	.0%	.3%	.0%
Catalpa	.0	.0	.0	1	.0%	.0%	.1%	.2%
DECAD	.0	.0	.0	0	.0%	.0%	.1%	.0%

(Continued)

# Market Share

TABLE NUMBER: 79 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Technical Workstation  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Other Companies	6.6	2.6	3.5	132	14.9%	9.6%	35.0%	26.7%
All Companies	44.6	27.4	10.0	495	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 37.8	 24.0	 7.1	 359	 84.6%	 87.5%	 70.6%	 72.6%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	6.9	3.4	2.9	136	15.4%	12.5%	29.4%	27.4%
All Hardware Companies	12.5	11.0	.0	123	27.9%	40.1%	.0%	24.9%
All Turnkey & SW Companies	32.2	16.4	10.0	371	72.1%	59.9%	100.0%	75.1%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 80  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	9.8	5.4	2.9	105	30.6%	28.8%	36.4%	30.1%
Prime Computer	4.2	1.9	1.2	28	13.2%	10.0%	14.7%	8.1%
Intergraph	3.7	2.1	.8	68	11.5%	11.3%	9.8%	19.5%
Control Data	2.9	2.0	.4	24	9.0%	10.9%	4.5%	7.0%
Digital	2.8	2.3	.0	0	8.6%	12.2%	.0%	.0%
Schlumberger (Applicon)	.9	.5	.1	13	2.7%	2.8%	1.0%	3.7%
Dassault	.7	.0	.6	0	2.1%	.0%	6.9%	.0%
MacNeal-Schwendler	.7	.0	.6	0	2.1%	.0%	7.7%	.0%
Sysscan	.6	.4	.1	0	1.9%	2.0%	.6%	.0%
Matra Datavision	.5	.4	.1	4	1.6%	2.0%	.6%	1.2%
Ferranti	.4	.3	.1	4	1.4%	1.3%	1.4%	1.1%
STI-Strassle	.4	.3	.1	1	1.2%	1.7%	1.0%	.3%
Siemens	.3	.2	.1	3	1.1%	1.1%	1.2%	.8%
Zycad	.2	.0	.1	0	.5%	.0%	1.7%	.0%
T2 Solutions	.2	.1	.0	0	.5%	.5%	.5%	.0%
Unisys	.1	.0	.1	2	.4%	.2%	.9%	.7%
McDonnell Douglas	.1	.1	.0	3	.3%	.3%	.2%	.8%
Apollo	.1	.1	.0	4	.3%	.5%	.0%	1.0%
Olivetti	.1	.1	.0	7	.3%	.3%	.5%	1.9%
Silvar-Lisco	.1	.0	.1	0	.2%	.0%	.6%	.0%
Sun	.1	.1	.0	2	.2%	.3%	.0%	.5%
Synercom	.1	.0	.1	0	.2%	.0%	.6%	.0%
PAFEC	.1	.0	.1	0	.2%	.0%	.6%	.0%
SDRC	.0	.0	.0	0	.1%	.0%	.5%	.0%
Thom 6	.0	.0	.0	0	.1%	.0%	.1%	.0%

(Continued)

# Market Share

TABLE NUMBER: 80 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Host/Server  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
Other Companies	2.5	2.7	.1	75	7.8%	14.2%	.7%	21.7%
All Companies	32.0	18.7	8.1	347	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	28.7	17.0	7.0	329	89.8%	91.1%	86.4%	94.6%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	3.3	1.7	1.1	19	10.2%	8.9%	13.6%	5.4%
All Hardware Companies	5.9	5.6	.0	81	18.4%	29.7%	.0%	23.3%
All Turnkey & SW Companies	26.1	13.1	8.1	266	81.6%	70.3%	100.0%	76.7%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 81  
 TITLE: 1988 Market Share  
 APPLICATION: All Applications  
 PLATFORM: Personal Computer  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Autodesk	3.4	.0	3.4	0	22.9%	.0%	43.0%	.0%
IBM	1.4	1.3	.1	220	9.6%	17.7%	.9%	15.4%
Olivetti	1.1	.4	.4	191	7.2%	5.7%	5.1%	13.3%
CAD-UL	.7	.2	.5	20	4.9%	3.2%	6.1%	1.4%
Ziegler Instruments GmbH	.7	.0	.7	0	4.7%	.0%	8.5%	.0%
CADAM	.6	.0	.5	0	3.9%	.0%	6.6%	.0%
Cimatron	.3	.3	.0	7	2.2%	3.7%	.4%	.5%
Prime Computer	.3	.1	.2	3	2.1%	.7%	2.9%	.2%
Robocom	.3	.0	.3	0	2.0%	.0%	3.7%	.0%
Logotec	.3	.2	.1	2	1.7%	2.0%	1.0%	.1%
Intergraph	.2	.0	.2	0	1.3%	.0%	2.4%	.0%
RHV Software Systems	.2	.0	.2	0	1.1%	.0%	2.0%	.0%
Vision 3D	.1	.1	.0	2	.8%	1.3%	.3%	.1%
Intercad	.1	.1	.0	5	.7%	1.2%	.0%	.4%
European Silicon Structures	.1	.0	.1	0	.5%	.0%	1.0%	.0%
MacNeal-Schwendler	.0	.0	.0	0	.1%	.0%	.1%	.0%
Secmai	.0	.0	.0	0	.1%	.0%	.0%	.0%
Other Companies	4.7	4.0	1.8	618	31.6%	52.5%	23.2%	43.1%
All Companies	14.8	7.6	7.9	1,433	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	11.0	6.3	5.7	1,207	74.2%	82.9%	72.0%	84.2%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	3.8	1.3	2.2	226	25.8%	17.1%	28.0%	15.8%
All Hardware Companies	4.7	5.9	.0	1,173	31.8%	78.5%	.0%	81.8%
All Turnkey & SW Companies	10.1	1.6	7.9	261	68.2%	21.5%	100.0%	18.2%

Source: Dataquest  
 April 1989



# Market Share

TABLE NUMBER: 82  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					Market Share			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
IBM	10.5	6.2	2.9	250	17.7%	16.6%	19.6%	17.1%
Silicon Graphics	8.7	7.9	.0	0	14.6%	21.1%	.0%	.0%
Prime Computer	8.4	4.1	2.0	76	14.1%	10.9%	13.3%	5.2%
Control Data	3.4	2.5	.3	35	5.8%	6.6%	2.3%	2.4%
Cimatron	3.3	1.7	1.4	73	5.6%	4.4%	9.2%	4.9%
Intergraph	3.3	2.0	.6	36	5.6%	5.4%	4.1%	2.5%
Schlumberger (Applicon)	2.7	1.6	.3	37	4.5%	4.4%	1.8%	2.5%
Digital	2.3	1.8	.0	30	3.9%	4.8%	.0%	2.0%
Autodesk	1.7	.0	1.7	0	2.8%	.0%	11.4%	.0%
Autokon CIM Systems	1.3	.1	1.2	2	2.2%	.2%	8.2%	.1%
STI-Strassle	1.2	1.0	.2	2	2.0%	2.6%	1.6%	.1%
Olivetti	.9	.4	.3	143	1.5%	.9%	2.3%	9.7%
MacNeal-Schwendler	.8	.0	.7	0	1.3%	.0%	4.8%	.0%
Dassault	.7	.0	.6	0	1.2%	.0%	4.0%	.0%
Matra Datavision	.5	.4	.1	4	.8%	1.0%	.3%	.3%
Unisys	.5	.1	.3	9	.8%	.3%	2.0%	.6%
Ferranti	.4	.3	.1	4	.7%	.7%	.7%	.3%
Apollo	.4	.4	.0	18	.7%	1.0%	.0%	1.3%
Gerber Systems	.3	.2	.1	5	.5%	.5%	.9%	.3%
PAFEC	.3	.0	.3	0	.4%	.0%	1.8%	.0%
Ziegler Instruments GmbH	.2	.0	.2	0	.4%	.0%	1.4%	.0%
Logotec	.2	.1	.1	1	.3%	.3%	.4%	.1%
RNV Software Systems	.1	.0	.1	0	.2%	.0%	1.0%	.0%
Robocom	.1	.0	.1	0	.2%	.0%	1.0%	.0%
Sun	.1	.1	.0	7	.2%	.3%	.0%	.5%
SDRC	.1	.0	.1	0	.2%	.0%	.8%	.0%
Vision 3D	.1	.1	.0	2	.2%	.3%	.1%	.1%
McDonnell Douglas	.1	.1	.0	3	.2%	.2%	.1%	.2%
Sysscan	.1	.0	.0	0	.2%	.0%	.0%	.0%
Intercad	.1	.1	.0	2	.1%	.1%	.0%	.2%
Siemens	.0	.0	.0	1	.1%	.0%	.1%	.0%
Catalpa	.0	.0	.0	1	.0%	.0%	.1%	.1%

(Continued)

# Market Share

TABLE NUMBER: 82 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Mechanical  
 PLATFORM: All Platforms  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Other Companies	8.6	6.1	3.2	504	14.4%	16.3%	21.5%	34.3%
All Companies	59.4	37.4	14.7	1,467	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 51.0	 33.5	 11.2	 1,236	 85.9%	 89.6%	 75.8%	 84.3%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	8.4	3.9	3.6	231	14.1%	10.4%	24.2%	15.7%
All Hardware Companies	18.2	17.8	.0	905	30.7%	47.6%	.0%	61.7%
All Turnkey & SW Companies	41.2	19.6	14.7	562	69.3%	52.4%	100.0%	38.3%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 83  
 TITLE: 1988 Market Share  
 APPLICATION: AEC  
 PLATFORM: All Platforms  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Intergraph	4.6	2.9	.8	51	41.6%	44.0%	25.7%	12.9%
Prime Computer	1.4	.7	.4	17	12.9%	11.1%	11.0%	4.2%
Autodesk	1.0	.0	1.0	0	9.2%	.0%	31.5%	.0%
Siemens	.7	.4	.2	14	6.4%	6.5%	6.4%	3.4%
Digital	.6	.5	.0	8	5.6%	7.4%	.0%	2.0%
IBM	.6	.5	.1	62	5.2%	7.4%	1.8%	15.9%
Olivetti	.2	.1	.1	31	1.6%	1.2%	2.4%	8.0%
T2 Solutions	.2	.1	.0	0	1.3%	1.4%	1.2%	.0%
Apollo	.1	.1	.0	5	1.1%	1.5%	.0%	1.3%
Robocom	.1	.0	.1	0	1.1%	.0%	3.7%	.0%
Dassault	.1	.0	.1	0	.9%	.0%	2.8%	.0%
Ziegler Instruments GmbH	.1	.0	.1	0	.8%	.0%	2.8%	.0%
Control Data	.1	.1	.0	1	.7%	.9%	.3%	.2%
PAFEC	.1	.0	.1	0	.5%	.0%	1.8%	.0%
McDonnell Douglas	.0	.0	.0	1	.4%	.5%	.3%	.2%
Sun	.0	.0	.0	1	.1%	.2%	.0%	.1%
Other Companies	.9	1.0	.3	145	8.2%	14.7%	7.6%	36.9%
All Companies	11.2	6.5	3.3	393	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	9.8	5.9	2.6	348	87.4%	90.9%	78.9%	88.5%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.4	.6	.7	45	12.6%	9.1%	21.1%	11.5%
All Hardware Companies	1.9	2.1	.0	275	17.3%	31.7%	.0%	70.0%
All Turnkey & SW Companies	9.2	4.4	3.3	118	82.7%	68.3%	100.0%	30.0%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 84  
 TITLE: 1988 Market Share  
 APPLICATION: Mapping  
 PLATFORM: All Platforms  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Intergraph	2.3	1.4	.4	25	35.0%	38.0%	22.9%	18.8%
Siemens	.7	.4	.2	14	11.1%	11.5%	11.7%	10.3%
STI-Strassle	.5	.4	.1	1	8.1%	11.2%	5.6%	.9%
Sysscan	.5	.4	.1	0	7.8%	10.4%	2.8%	.0%
Digital	.4	.3	.0	5	6.7%	9.0%	.0%	4.2%
IBM	.4	.2	.1	11	5.9%	6.3%	5.0%	8.1%
Autodesk	.3	.0	.3	0	5.0%	.0%	17.9%	.0%
Prime Computer	.1	.0	.0	0	2.0%	.5%	.6%	.2%
Olivetti	.1	.1	.0	24	1.6%	1.4%	1.1%	18.3%
Synercom	.1	.0	.1	0	.9%	.0%	2.8%	.0%
Ziegler Instruments GmbH	.1	.0	.1	0	.8%	.0%	2.8%	.0%
Robocom	.0	.0	.0	0	.2%	.0%	.6%	.0%
Sun	.0	.0	.0	0	.2%	.3%	.0%	.3%
Other Companies	.3	.3	.1	39	4.8%	7.9%	3.4%	30.1%
All Companies	6.4	3.7	1.8	131	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	4.5	2.4	1.4	92	70.6%	65.6%	75.4%	70.5%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.9	1.3	.4	39	29.4%	34.4%	24.6%	29.5%
All Hardware Companies	.8	.7	.0	61	11.8%	19.1%	.0%	46.3%
All Turnkey & SW Companies	5.7	3.0	1.8	70	88.2%	80.9%	100.0%	53.7%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 85  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
Daisy Systems	3.0	1.5	.8	30	21.0%	23.7%	13.2%	10.7%
Digital	.9	.7	.0	11	5.9%	10.6%	.0%	3.8%
Intergraph	.9	.5	.1	9	5.9%	8.8%	2.3%	3.3%
CAD-UL	.7	.2	.5	20	5.0%	3.9%	7.7%	6.9%
CADAM	.6	.0	.5	0	4.0%	.0%	8.4%	.0%
Autodesk	.6	.0	.6	0	3.8%	.0%	8.9%	.0%
Prime Computer	.5	.2	.1	3	3.1%	3.6%	1.8%	1.2%
Silvar-Lisco	.5	.0	.3	0	3.1%	.0%	4.8%	.0%
Control Data	.4	.3	.0	5	3.0%	5.1%	.6%	1.8%
European Silicon Structures	.4	.0	.4	0	2.8%	.0%	6.6%	.0%
Apollo	.4	.3	.0	16	2.6%	5.2%	.0%	5.7%
Ziegler Instruments GmbH	.4	.0	.3	0	2.4%	.0%	5.3%	.0%
Secmai	.3	.2	.0	2	1.9%	2.9%	.6%	.8%
IBM	.2	.2	.1	13	1.6%	2.6%	.8%	4.5%
Technische Computer Systeme	.2	.1	.2	40	1.5%	1.0%	2.4%	14.1%
Sun	.2	.2	.0	10	1.5%	2.9%	.0%	3.3%
Zycad	.2	.0	.1	0	1.1%	.0%	2.3%	.0%
Calay	.1	.1	.0	1	.6%	1.0%	.3%	.4%
Logotec	.1	.0	.0	0	.4%	.7%	.3%	.1%
Intercad	.1	.0	.0	3	.3%	.7%	.0%	.9%
Thom 6	.1	.0	.0	0	.3%	.0%	.6%	.0%
Schlumberger (Applicon)	.0	.0	.0	1	.3%	.3%	.0%	.2%
Dassault	.0	.0	.0	0	.2%	.0%	.3%	.0%
DECAD	.0	.0	.0	0	.1%	.2%	.2%	.0%
RHV Software Systems	.0	.0	.0	0	.1%	.0%	.3%	.0%
Robocom	.0	.0	.0	0	.1%	.0%	.3%	.0%

(Continued)

# Market Share

TABLE NUMBER: 85 (Continued)  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic Design Automation  
 PLATFORM: All Platforms  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company *****					----- Market Share -----			
	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****	Total Revenue *****	Hardware Revenue *****	Software Revenue *****	Wkstns Shipped *****
Other Companies	4.0	1.9	1.9	137	27.7%	31.5%	30.8%	48.3%
All Companies	14.5	6.1	6.2	284	100.0%	100.0%	100.0%	100.0%
 All U.S.-Based Companies	 12.2	 5.5	 4.6	 218	 84.0%	 89.7%	 74.8%	 76.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	2.3	.6	1.6	66	16.0%	10.3%	25.2%	23.2%
All Hardware Companies	2.1	1.9	.0	136	14.8%	31.4%	.0%	47.8%
All Turnkey & SW Companies	12.3	4.2	6.2	148	85.2%	68.6%	100.0%	52.2%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 86  
 TITLE: 1988 Market Share  
 APPLICATION: Electronic CAE  
 PLATFORM: All Platforms  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
Daisy Systems	2.4	1.1	.6	25	37.9%	44.5%	24.3%	18.2%
Digital	.4	.3	.0	5	6.7%	12.5%	.0%	3.8%
Autodesk	.4	.0	.4	0	6.5%	.0%	15.6%	.0%
Apollo	.3	.3	.0	13	4.8%	10.2%	.0%	9.6%
Control Data	.2	.2	.0	3	3.8%	6.3%	.8%	2.5%
Technische Computer Systeme	.2	.1	.2	40	3.5%	2.3%	5.7%	28.8%
Ziegler Instruments GmbH	.2	.0	.2	0	3.3%	.0%	7.6%	.0%
Silvar-Lisco	.2	.0	.1	0	2.9%	.0%	4.6%	.0%
Zycad	.2	.0	.1	0	2.5%	.0%	5.3%	.0%
Sun	.1	.1	.0	5	1.8%	3.5%	.0%	3.5%
Intergraph	.1	.1	.0	1	1.4%	2.3%	.4%	.7%
Prime Computer	.1	.0	.0	1	1.3%	1.6%	.8%	.6%
Logotec	.1	.0	.0	0	1.0%	1.6%	.8%	.3%
Thom 6	.1	.0	.0	0	.8%	.0%	1.5%	.0%
IBM	.0	.0	.0	6	.6%	1.6%	.0%	4.6%
Dassault	.0	.0	.0	0	.5%	.0%	.8%	.0%
Intercad	.0	.0	.0	1	.3%	.8%	.0%	.7%
RNV Software Systems	.0	.0	.0	0	.3%	.0%	.8%	.0%
Robocom	.0	.0	.0	0	.2%	.0%	.4%	.0%
Secmai	.0	.0	.0	0	.2%	.4%	.0%	.1%
Other Companies	.8	.4	.5	62	12.9%	13.7%	17.5%	44.9%
All Companies	6.3	2.6	2.6	139	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	5.7	2.4	2.2	97	90.0%	94.9%	82.5%	70.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.6	.1	.5	41	10.0%	5.1%	17.5%	29.9%
All Hardware Companies	1.1	1.0	.0	60	17.7%	37.9%	.0%	43.5%
All Turnkey & SW Companies	5.2	1.6	2.6	78	82.3%	62.1%	100.0%	56.5%

Source: Dataquest  
 April 1989

# Market Share

TABLE NUMBER: 87  
 TITLE: 1988 Market Share  
 APPLICATION: IC Layout  
 PLATFORM: All Platforms  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
-----	-----	-----	-----	-----	-----	-----	-----	-----
European Silicon Structures	.4	.0	.4	0	20.5%	.0%	30.4%	.0%
Silvar-Lisco	.3	.0	.2	0	13.5%	.0%	13.3%	.0%
Daisy Systems	.2	.1	.0	1	7.5%	17.9%	3.0%	12.4%
Digital	.1	.1	.0	2	6.0%	25.6%	.0%	19.0%
Intergraph	.1	.1	.0	1	5.0%	17.9%	.7%	13.0%
Control Data	.1	.1	.0	1	4.0%	15.4%	.7%	7.4%
Sun	.1	.1	.0	3	3.0%	12.8%	.0%	31.8%
Other Companies	.5	.0	.4	1	22.5%	10.3%	30.4%	14.6%
All Companies	2.0	.4	1.4	8	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	1.6	.4	.9	8	79.5%	100.0%	69.6%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.4	.0	.4	0	20.5%	.0%	30.4%	.0%
All Hardware Companies	.2	.2	.0	6	12.0%	51.3%	.0%	67.1%
All Turnkey & SW Companies	1.8	.2	1.4	3	88.0%	48.7%	100.0%	32.9%

Source: Dataquest  
 April 1989

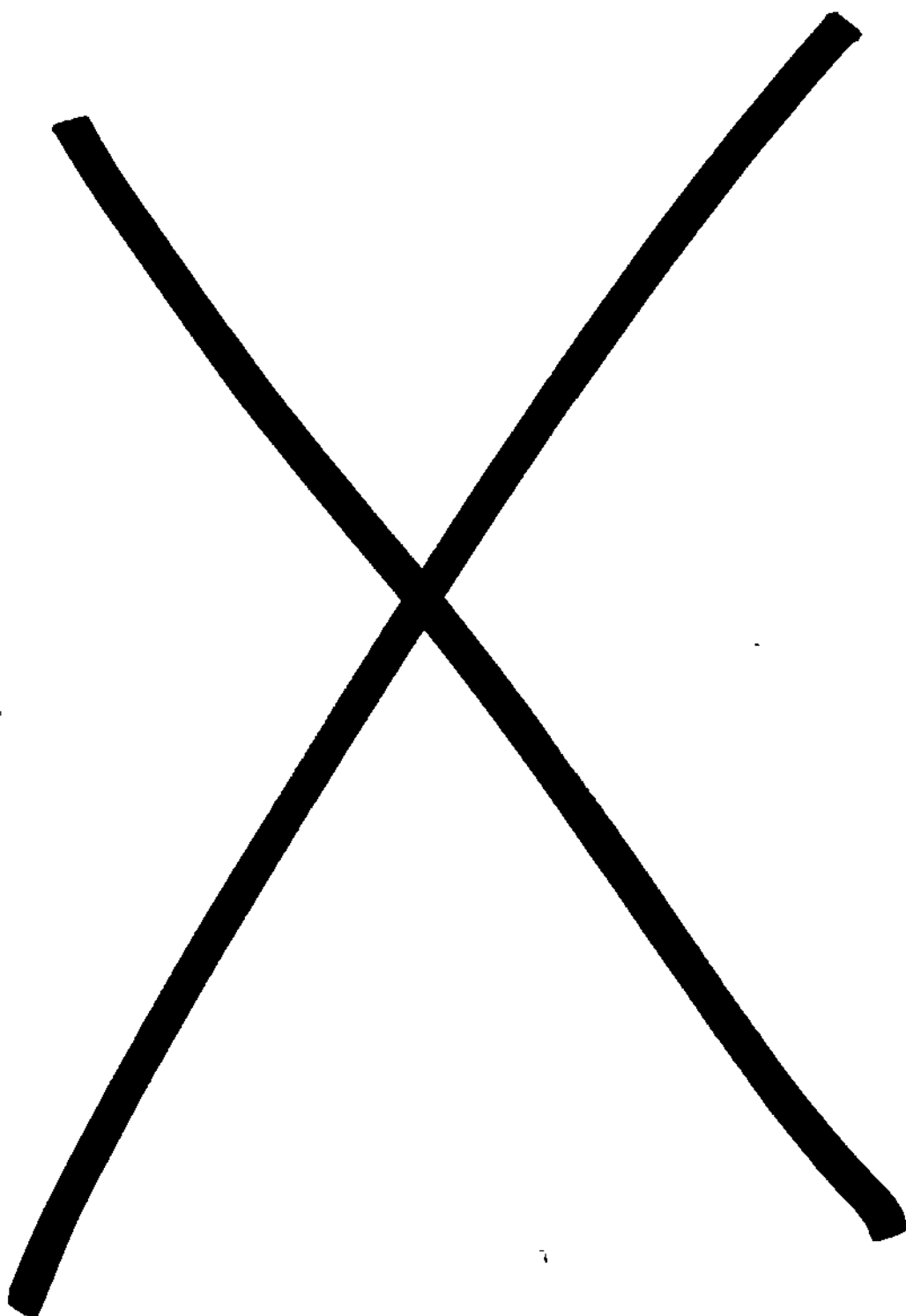


# Market Share

TABLE NUMBER: 88  
 TITLE: 1988 Market Share  
 APPLICATION: PCB Layout  
 PLATFORM: All Platforms  
 REGION: Rest of Europe  
 UNITS: Millions of Dollars/Actual Units

Company					----- Market Share -----			
	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped	Total Revenue	Hardware Revenue	Software Revenue	Wkstns Shipped
=====	=====	=====	=====	=====	=====	=====	=====	=====
CAD-UL	.7	.2	.5	20	11.6%	7.6%	21.6%	14.3%
Intergraph	.7	.4	.1	7	10.6%	12.9%	5.4%	5.3%
CADAM	.6	.0	.5	0	9.4%	.0%	23.4%	.0%
Daisy Systems	.5	.2	.1	4	8.2%	7.6%	6.3%	3.0%
Prime Computer	.4	.2	.1	3	6.0%	5.7%	4.1%	1.9%
Digital	.3	.2	.0	4	5.0%	7.3%	.0%	2.8%
Secmai	.3	.2	.0	2	4.4%	5.4%	1.8%	1.6%
IBM	.2	.1	.1	6	3.1%	3.8%	2.3%	4.7%
Autodesk	.1	.0	.1	0	2.3%	.0%	6.3%	.0%
Ziegler Instruments GmbH	.1	.0	.1	0	2.3%	.0%	5.9%	.0%
Control Data	.1	.1	.0	1	1.9%	2.8%	.5%	.7%
Calay	.1	.1	.0	1	1.5%	1.9%	.9%	.8%
Apollo	.1	.1	.0	3	1.1%	1.9%	.0%	2.2%
Schlumberger (Applicon)	.0	.0	.0	1	.6%	.6%	.0%	.4%
Sun	.0	.0	.0	2	.6%	1.3%	.0%	1.4%
Intercad	.0	.0	.0	2	.5%	.6%	.0%	1.2%
DECAD	.0	.0	.0	0	.3%	.3%	.5%	.0%
Robocom	.0	.0	.0	0	.2%	.0%	.5%	.0%
Other Companies	2.8	1.5	1.0	73	44.4%	48.6%	46.8%	53.7%
All Companies	6.2	3.2	2.2	137	100.0%	100.0%	100.0%	100.0%
All U.S.-Based Companies	4.9	2.7	1.5	112	79.4%	84.2%	68.9%	82.2%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.3	.5	.7	24	20.6%	15.8%	31.1%	17.8%
All Hardware Companies	.8	.8	.0	70	12.7%	23.7%	.0%	51.0%
All Turnkey & SW Companies	5.4	2.4	2.2	67	87.3%	76.3%	100.0%	49.0%

Source: Dataquest  
 April 1989



# 

TABLE NUMBER: 1  
 TITLE: Company History  
 COMPANY: Albert Nestler  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	NA	4.1	5.4	NA
Workstation Shipments	NA	100	138	NA
Mechanical				
Total Revenue	NA	4.1	5.4	NA
Workstation Shipments	NA	100	138	NA
Facilities Design				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Mapping				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Electronic CAE				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
IC Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
PCB Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Technical Workstation				
Total Revenue	NA	3.7	4.9	NA
Workstation Shipments	NA	75	106	NA
Host-Dependent				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Personal Computer				
Total Revenue	NA	.4	.5	NA
Workstation Shipments	NA	25	32	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 2  
 TITLE: Company History  
 COMPANY: Apollo  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR
	====	====	====	=====
All Applications				
Total Revenue	22.3	49.1	83.0	93.1%
Workstation Shipments	940	1,757	3,635	96.6%
Mechanical				
Total Revenue	6.0	15.9	32.4	132.1%
Workstation Shipments	251	569	1,418	137.7%
Facilities Design				
Total Revenue	2.2	3.3	10.0	111.7%
Workstation Shipments	93	118	436	116.4%
Mapping				
Total Revenue	.2	1.1	.8	93.1%
Workstation Shipments	9	39	36	97.6%
Electronic CAE				
Total Revenue	10.2	24.7	24.9	55.9%
Workstation Shipments	428	883	1,090	59.7%
IC Layout				
Total Revenue	1.8	.9	7.5	105.1%
Workstation Shipments	74	32	327	109.6%
PCB Layout				
Total Revenue	1.8	3.2	7.5	105.0%
Workstation Shipments	85	115	327	96.7%
Technical Workstation				
Total Revenue	22.3	49.1	74.7	83.2%
Workstation Shipments	940	1,757	3,311	87.7%
Host-Dependent				
Total Revenue	.0	.0	8.3	NA
Workstation Shipments	0	0	324	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 3  
 TITLE: Company History  
 COMPANY: Apple Computer  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	7.5	15.0	23.7	78.0%
Workstation Shipments	2,685	5,371	5,527	43.5%
Mechanical				
Total Revenue	4.0	7.9	15.0	94.6%
Workstation Shipments	1,423	2,846	3,500	56.8%
Facilities Design				
Total Revenue	1.7	5.4	5.7	85.9%
Workstation Shipments	591	1,933	1,330	50.0%
Mapping				
Total Revenue	.4	.5	1.0	66.0%
Workstation Shipments	134	161	238	33.1%
Electronic CAE				
Total Revenue	.9	.5	.5	-22.5%
Workstation Shipments	322	161	126	-37.5%
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.6	.8	1.4	54.4%
Workstation Shipments	215	269	333	24.4%
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	7.5	15.0	23.7	78.0%
Workstation Shipments	2,685	5,371	5,527	43.5%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 4  
 TITLE: Company History  
 COMPANY: Assigraph  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	=====	=====	=====	=====
All Applications				
Total Revenue	NA	7.0	6.2	NA
Workstation Shipments	NA	48	35	NA
Mechanical				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Facilities Design				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Mapping				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Electronic CAE				
Total Revenue	NA	3.5	3.2	NA
Workstation Shipments	NA	24	18	NA
IC Layout				
Total Revenue	NA	1.4	1.1	NA
Workstation Shipments	NA	10	6	NA
PCB Layout				
Total Revenue	NA	2.1	1.9	NA
Workstation Shipments	NA	14	11	NA
Technical Workstation				
Total Revenue	NA	2.8	3.3	NA
Workstation Shipments	NA	17	20	NA
Host-Dependent				
Total Revenue	NA	4.2	2.9	NA
Workstation Shipments	NA	31	16	NA
Personal Computer				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 5  
 TITLE: Company History  
 COMPANY: Aucotec  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	3.5	4.6	6.0	31.8%
Workstation Shipments	317	418	550	31.7%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	3.5	4.6	6.0	31.8%
Workstation Shipments	317	418	550	31.7%
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.2	.2	.3	35.0%
Workstation Shipments	16	21	28	31.7%
Host-Dependent				
Total Revenue	.2	.2	.3	35.0%
Workstation Shipments	16	21	28	31.7%
Personal Computer				
Total Revenue	3.1	4.1	5.4	31.5%
Workstation Shipments	285	376	495	31.7%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 6  
 TITLE: Company History  
 COMPANY: Auto-Trol  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	2.0	9.9	9.7	117.6%
Workstation Shipments	23	116	270	242.0%
Mechanical				
Total Revenue	1.0	6.4	5.8	138.5%
Workstation Shipments	12	75	180	294.7%
Facilities Design				
Total Revenue	1.0	3.5	3.9	94.5%
Workstation Shipments	12	41	90	179.5%
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	2.0	9.4	9.7	117.6%
Workstation Shipments	23	110	254	231.7%
Host-Dependent				
Total Revenue	.0	.5	.0	NA
Workstation Shipments	0	6	16	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989



# 

TABLE NUMBER: 7  
 TITLE: Company History  
 COMPANY: Autodesk  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	10.6	20.6	35.6	83.3%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	3.9	10.0	16.7	105.8%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	5.6	7.8	11.3	41.4%
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.6	1.7	2.7	110.2%
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	3.5	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.4	1.1	1.5	84.3%
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.1	.2	1.8	318.3%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	10.5	20.4	33.9	79.5%
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 8  
 TITLE: Company History  
 COMPANY: Autokon CIM Systems  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	NA	1.8	3.0	NA
Workstation Shipments	NA	3	4	NA
Mechanical				
Total Revenue	NA	1.8	3.0	NA
Workstation Shipments	NA	3	4	NA
Facilities Design				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Mapping				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Electronic CAE				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
IC Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
PCB Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Technical Workstation				
Total Revenue	NA	1.8	3.0	NA
Workstation Shipments	NA	3	4	NA
Host-Dependent				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Personal Computer				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 9  
 TITLE: Company History  
 COMPANY: CAD Centre  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	5.2	8.5	10.9	44.6%
Workstation Shipments	10	0	0	-100.0%
Mechanical				
Total Revenue	5.2	2.6	3.4	-19.6%
Workstation Shipments	10	0	0	-100.0%
Facilities Design				
Total Revenue	.0	5.9	7.5	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	5.2	8.5	10.9	44.6%
Workstation Shipments	10	0	0	-100.0%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 10  
 TITLE: Company History  
 COMPANY: CAD Lab  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	3.1	6.5	10.0	79.6%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	1.9	4.6	7.0	94.0%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	1.2	2.0	3.0	55.5%
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	5.9	9.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	3.1	.0	.0	-100.0%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.7	1.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# Historical Company Data

TABLE NUMBER: 11  
 TITLE: Company History  
 COMPANY: CAD-UL  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	.5	.7	1.0	40.7%
Workstation Shipments	0	19	27	NA
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.5	.7	1.0	40.7%
Workstation Shipments	0	19	27	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.5	.7	1.0	40.7%
Workstation Shipments	0	19	27	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 12  
 TITLE: Company History  
 COMPANY: CADAM  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	6.1	11.2	10.3	30.7%
Workstation Shipments	20	34	0	-100.0%
Mechanical				
Total Revenue	1.9	2.6	3.4	32.5%
Workstation Shipments	14	20	0	-100.0%
Facilities Design				
Total Revenue	1.0	1.3	.7	-17.1%
Workstation Shipments	3	14	0	-100.0%
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.5	.1	.0	-100.0%
Workstation Shipments	1	0	0	-100.0%
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	2.7	7.2	6.3	53.1%
Workstation Shipments	3	0	0	-100.0%
Technical Workstation				
Total Revenue	.0	.1	1.4	1083.2%
Workstation Shipments	0	0	0	-100.0%
Host-Dependent				
Total Revenue	3.5	5.0	3.0	-7.3%
Workstation Shipments	8	22	0	-100.0%
Personal Computer				
Total Revenue	2.6	6.1	5.9	52.5%
Workstation Shipments	12	12	0	-100.0%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 13  
 TITLE: Company History  
 COMPANY: Cade  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	NA	6.9	8.0	NA
Workstation Shipments	NA	20	23	NA
Mechanical				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Facilities Design				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Mapping				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Electronic CAE				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
IC Layout				
Total Revenue	NA	2.8	2.9	NA
Workstation Shipments	NA	12	13	NA
PCB Layout				
Total Revenue	NA	4.1	5.1	NA
Workstation Shipments	NA	8	9	NA
Technical Workstation				
Total Revenue	NA	6.9	8.0	NA
Workstation Shipments	NA	20	23	NA
Host-Dependent				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Personal Computer				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 14  
 TITLE: Company History  
 COMPANY: Cadence  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	=====	=====	=====	=====
All Applications				
Total Revenue	3.0	7.3	9.3	75.0%
Workstation Shipments	5	2	0	-100.0%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.1	.0	1.4	267.4%
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	2.9	7.2	7.7	62.5%
Workstation Shipments	5	2	0	-100.0%
PCB Layout				
Total Revenue	.0	.1	.2	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	2.1	7.1	7.4	90.0%
Workstation Shipments	5	2	0	-100.0%
Host-Dependent				
Total Revenue	1.0	.2	1.9	38.1%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989



# 

TABLE NUMBER: 15  
 TITLE: Company History  
 COMPANY: Cadtronic  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	2.0	2.6	2.8	19.0%
Workstation Shipments	80	90	36	-32.7%
Mechanical				
Total Revenue	.4	.5	.3	-16.3%
Workstation Shipments	16	18	4	-52.4%
Facilities Design				
Total Revenue	1.2	1.6	1.7	19.0%
Workstation Shipments	48	54	22	-32.7%
Mapping				
Total Revenue	.4	.5	.9	45.8%
Workstation Shipments	16	18	11	-17.6%
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	2.0	2.6	2.8	19.0%
Workstation Shipments	80	90	36	-32.7%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 16  
 TITLE: Company History  
 COMPANY: Calay  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	13.7	13.6	9.0	-18.8%
Workstation Shipments	100	105	108	3.9%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	13.7	13.6	9.0	-18.8%
Workstation Shipments	100	105	108	3.9%
Technical Workstation				
Total Revenue	13.7	13.6	9.0	-18.8%
Workstation Shipments	100	105	108	3.9%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 17  
 TITLE: Company History  
 COMPANY: Catalpa  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	.5	.6	1.1	51.4%
Workstation Shipments	15	18	22	22.1%
Mechanical				
Total Revenue	.5	.6	1.1	51.4%
Workstation Shipments	15	18	22	22.1%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.5	.6	1.1	51.4%
Workstation Shipments	15	18	22	22.1%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 18  
 TITLE: Company History  
 COMPANY: Cimatron  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	8.8	10.7	13.3	23.4%
Workstation Shipments	228	278	340	22.2%
Mechanical				
Total Revenue	8.8	10.7	13.3	23.4%
Workstation Shipments	228	278	340	22.2%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	7.9	9.6	12.0	23.4%
Workstation Shipments	205	250	306	22.2%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.9	1.1	1.3	22.9%
Workstation Shipments	23	28	34	22.2%

Source: Dataquest  
 April 1989

# Historical Company Data

TABLE NUMBER: 19  
 TITLE: Company History  
 COMPANY: Cimline  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	=====	=====	=====	=====
All Applications				
Total Revenue	5.3	10.0	14.7	67.3%
Workstation Shipments	129	142	750	141.4%
Mechanical				
Total Revenue	5.3	10.0	14.3	64.8%
Workstation Shipments	129	142	728	137.8%
Facilities Design				
Total Revenue	.0	.0	.5	NA
Workstation Shipments	0	0	22	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	5.3	10.0	14.0	63.2%
Workstation Shipments	129	142	703	133.8%
Host-Dependent				
Total Revenue	.0	.0	.7	NA
Workstation Shipments	0	0	47	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 20  
 TITLE: Company History  
 COMPANY: Cisigraph  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	21.0	23.3	20.0	-2.4%
Workstation Shipments	397	824	400	.4%
Mechanical				
Total Revenue	21.0	23.3	20.0	-2.4%
Workstation Shipments	397	824	400	.4%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	21.0	2.3	6.0	-46.5%
Workstation Shipments	397	35	67	-59.0%
Host-Dependent				
Total Revenue	.0	19.8	14.0	NA
Workstation Shipments	0	751	333	NA
Personal Computer				
Total Revenue	.0	1.2	.0	NA
Workstation Shipments	0	38	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 21  
 TITLE: Company History  
 COMPANY: Compaq  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	8.3	34.0	61.5	172.8%
Workstation Shipments	2,500	9,550	11,798	117.2%
Mechanical				
Total Revenue	.4	17.0	43.4	928.9%
Workstation Shipments	125	4,775	8,333	716.5%
Facilities Design				
Total Revenue	6.2	10.2	6.3	.9%
Workstation Shipments	1,875	2,865	1,210	-19.7%
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.8	3.4	4.8	139.2%
Workstation Shipments	250	955	912	91.0%
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.8	3.4	7.0	190.4%
Workstation Shipments	250	955	1,344	131.9%
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	8.3	34.0	61.5	172.8%
Workstation Shipments	2,500	9,550	11,798	117.2%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 22  
 TITLE: Company History  
 COMPANY: Control Data  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	60.0	59.5	93.4	24.8%
Workstation Shipments	640	566	1,092	30.6%
Mechanical				
Total Revenue	54.3	52.6	81.3	22.4%
Workstation Shipments	569	415	953	29.4%
Facilities Design				
Total Revenue	.0	1.2	1.9	NA
Workstation Shipments	0	4	21	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	2.8	5.6	NA
Workstation Shipments	0	2	66	NA
IC Layout				
Total Revenue	.0	.9	1.9	NA
Workstation Shipments	0	0	21	NA
PCB Layout				
Total Revenue	5.8	1.9	2.8	-30.3%
Workstation Shipments	71	144	32	-32.5%
Technical Workstation				
Total Revenue	.0	5.8	24.5	NA
Workstation Shipments	0	104	525	NA
Host-Dependent				
Total Revenue	60.0	51.9	68.9	7.2%
Workstation Shipments	640	318	567	-5.9%
Personal Computer				
Total Revenue	.0	1.8	.0	NA
Workstation Shipments	0	144	0	NA

Source: Dataquest  
 April 1989



# 

TABLE NUMBER: 23  
 TITLE: Company History  
 COMPANY: Daisy Systems  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	47.5	54.0	77.3	27.5%
Workstation Shipments	630	376	761	9.9%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	35.8	42.8	48.3	16.1%
Workstation Shipments	525	332	534	.8%
IC Layout				
Total Revenue	5.2	4.6	2.5	-30.9%
Workstation Shipments	41	14	17	-34.5%
PCB Layout				
Total Revenue	6.5	6.7	26.5	101.7%
Workstation Shipments	64	29	210	80.8%
Technical Workstation				
Total Revenue	24.4	35.9	70.6	70.0%
Workstation Shipments	230	166	679	71.7%
Host-Dependent				
Total Revenue	2.3	8.1	5.4	51.9%
Workstation Shipments	0	84	82	NA
Personal Computer				
Total Revenue	20.8	10.0	1.3	-75.2%
Workstation Shipments	400	125	0	-100.0%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 24  
 TITLE: Company History  
 COMPANY: Dassault  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	****	****	****	*****
All Applications				
Total Revenue	18.2	14.9	28.0	24.1%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	18.2	14.1	23.8	14.4%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.8	3.4	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.9	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	2.2	5.6	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	18.2	12.6	22.4	10.9%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 25  
 TITLE: Company History  
 COMPANY: DECAD  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	****	****	****	****
All Applications				
Total Revenue	.6	.9	1.2	39.1%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.6	.9	1.2	39.1%
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.6	.8	1.1	39.0%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.1	41.4%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 26  
 TITLE: Company History  
 COMPANY: Digital  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	****	****	****	*****
All Applications				
Total Revenue	188.4	237.5	234.0	11.4%
Workstation Shipments	218	927	2,950	268.0%
Mechanical				
Total Revenue	109.4	142.5	128.7	8.4%
Workstation Shipments	120	556	1,623	268.1%
Facilities Design				
Total Revenue	26.2	16.6	35.1	15.8%
Workstation Shipments	29	65	443	292.5%
Mapping				
Total Revenue	10.2	23.8	23.4	51.7%
Workstation Shipments	11	93	295	413.0%
Electronic CAE				
Total Revenue	25.9	35.6	23.4	-4.9%
Workstation Shipments	38	139	295	179.6%
IC Layout				
Total Revenue	6.5	7.1	7.0	4.0%
Workstation Shipments	3	28	89	405.8%
PCB Layout				
Total Revenue	10.3	11.9	16.4	25.9%
Workstation Shipments	17	46	207	249.4%
Technical Workstation				
Total Revenue	21.6	30.9	81.9	94.5%
Workstation Shipments	218	927	2,950	268.0%
Host-Dependent				
Total Revenue	166.8	206.6	152.1	-4.5%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 27  
 TITLE: Company History  
 COMPANY: Engineering Computer Services  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	NA	8.9	10.5	NA
Workstation Shipments	NA	200	215	NA
Mechanical				
Total Revenue	NA	8.9	10.5	NA
Workstation Shipments	NA	200	215	NA
Facilities Design				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Mapping				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Electronic CAE				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
IC Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
PCB Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Technical Workstation				
Total Revenue	NA	3.7	5.3	NA
Workstation Shipments	NA	64	57	NA
Host-Dependent				
Total Revenue	NA	1.8	.0	NA
Workstation Shipments	NA	21	0	NA
Personal Computer				
Total Revenue	NA	3.4	5.3	NA
Workstation Shipments	NA	115	158	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 28  
 TITLE: Company History  
 COMPANY: ESRI  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	=====	=====	=====	=====
All Applications				
Total Revenue	NA	NA	4.9	NA
Workstation Shipments	NA	NA	7	NA
Mechanical				
Total Revenue	NA	NA	.0	NA
Workstation Shipments	NA	NA	0	NA
Facilities Design				
Total Revenue	NA	NA	.0	NA
Workstation Shipments	NA	NA	0	NA
Mapping				
Total Revenue	NA	NA	4.9	NA
Workstation Shipments	NA	NA	7	NA
Electronic CAE				
Total Revenue	NA	NA	.0	NA
Workstation Shipments	NA	NA	0	NA
IC Layout				
Total Revenue	NA	NA	.0	NA
Workstation Shipments	NA	NA	0	NA
PCB Layout				
Total Revenue	NA	NA	.0	NA
Workstation Shipments	NA	NA	0	NA
Technical Workstation				
Total Revenue	NA	NA	.8	NA
Workstation Shipments	NA	NA	3	NA
Host-Dependent				
Total Revenue	NA	NA	3.3	NA
Workstation Shipments	NA	NA	4	NA
Personal Computer				
Total Revenue	NA	NA	.8	NA
Workstation Shipments	NA	NA	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 29  
 TITLE: Company History  
 COMPANY: European Silicon Structures  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR
	====	====	====	86-88
				=====
All Applications				
Total Revenue	NA	6.6	4.1	NA
Workstation Shipments	NA	0	0	NA
Mechanical				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Facilities Design				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Mapping				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Electronic CAE				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
IC Layout				
Total Revenue	NA	6.6	4.1	NA
Workstation Shipments	NA	0	0	NA
PCB Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Technical Workstation				
Total Revenue	NA	3.3	3.2	NA
Workstation Shipments	NA	0	0	NA
Host-Dependent				
Total Revenue	NA	3.3	.3	NA
Workstation Shipments	NA	0	0	NA
Personal Computer				
Total Revenue	NA	.0	.7	NA
Workstation Shipments	NA	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 30  
 TITLE: Company History  
 COMPANY: Exapt  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	9.7	11.4	12.1	11.8%
Workstation Shipments	146	173	189	13.5%
Mechanical				
Total Revenue	9.7	11.4	12.1	11.8%
Workstation Shipments	146	173	189	13.5%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	2.4	2.9	3.7	23.0%
Workstation Shipments	37	43	61	28.5%
Host-Dependent				
Total Revenue	7.3	8.5	8.5	7.9%
Workstation Shipments	110	129	128	8.0%
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989



# Historical Company Data

TABLE NUMBER:	31
TITLE:	Company History
COMPANY:	Ferranti
REGION:	Europe
UNITS:	Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	=====	=====	=====	=====
All Applications				
Total Revenue	31.2	32.3	31.1	-.1%
Workstation Shipments	239	275	266	5.6%
Mechanical				
Total Revenue	31.2	32.3	31.1	-.1%
Workstation Shipments	239	275	266	5.6%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.6	.6	.8	10.6%
Workstation Shipments	7	8	11	26.9%
Host-Dependent				
Total Revenue	30.5	31.6	30.3	-.4%
Workstation Shipments	232	267	255	4.9%
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
April 1989

# 

TABLE NUMBER: 32  
 TITLE: Company History  
 COMPANY: Futurenet  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	****	****	****	*****
All Applications				
Total Revenue	3.1	2.3	1.5	-29.6%
Workstation Shipments	59	0	0	-100.0%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	2.4	1.9	1.5	-21.3%
Workstation Shipments	50	0	0	-100.0%
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.6	.5	.0	-100.0%
Workstation Shipments	9	0	0	-100.0%
Technical Workstation				
Total Revenue	.0	.0	.2	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.1	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	3.1	2.3	1.3	-35.2%
Workstation Shipments	59	0	0	-100.0%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 33  
 TITLE: Company History  
 COMPANY: Genrad  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	4.5	4.8	4.2	-3.3%
Workstation Shipments	0	0	3	NA
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	4.5	4.8	4.2	-3.3%
Workstation Shipments	0	0	3	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	1.8	1.9	2.8	25.1%
Workstation Shipments	0	0	2	NA
Host-Dependent				
Total Revenue	2.7	2.9	1.4	-28.2%
Workstation Shipments	0	0	1	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 34  
 TITLE: Company History  
 COMPANY: Gerber Systems  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	3.6	4.2	5.4	21.9%
Workstation Shipments	43	64	86	42.0%
Mechanical				
Total Revenue	3.6	4.2	5.4	21.9%
Workstation Shipments	43	64	86	42.0%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	3.6	4.2	5.4	21.9%
Workstation Shipments	43	64	86	42.0%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 35  
 TITLE: Company History  
 COMPANY: Hewlett-Packard  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	66.7	59.4	127.3	38.1%
Workstation Shipments	1,532	3,110	6,296	102.7%
Mechanical				
Total Revenue	41.4	35.1	78.5	37.8%
Workstation Shipments	911	1,838	3,283	89.8%
Facilities Design				
Total Revenue	6.6	5.4	19.0	69.6%
Workstation Shipments	168	279	1,390	187.5%
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	6.4	4.9	13.5	45.2%
Workstation Shipments	172	258	880	125.9%
IC Layout				
Total Revenue	.6	.6	1.3	42.5%
Workstation Shipments	7	28	56	189.9%
PCB Layout				
Total Revenue	11.7	13.5	15.0	13.1%
Workstation Shipments	274	706	688	58.5%
Technical Workstation				
Total Revenue	66.7	59.4	107.3	26.8%
Workstation Shipments	1,532	3,110	2,486	27.4%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	20.0	NA
Workstation Shipments	0	0	3,810	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 36  
 TITLE: Company History  
 COMPANY: IBM  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	359.8	380.3	604.0	29.6%
Workstation Shipments	13,615	17,942	17,015	11.8%
Mechanical				
Total Revenue	307.7	317.0	526.8	30.8%
Workstation Shipments	9,307	10,873	12,513	16.0%
Facilities Design				
Total Revenue	20.8	31.2	39.8	38.4%
Workstation Shipments	1,712	4,130	3,281	38.4%
Mapping				
Total Revenue	8.3	10.9	18.1	48.0%
Workstation Shipments	210	420	510	55.9%
Electronic CAE				
Total Revenue	9.7	12.3	1.8	-56.7%
Workstation Shipments	1,244	1,894	300	-50.9%
IC Layout				
Total Revenue	.0	1.1	.0	-100.0%
Workstation Shipments	8	219	0	-100.0%
PCB Layout				
Total Revenue	13.3	7.8	17.5	14.6%
Workstation Shipments	1,133	406	410	-39.8%
Technical Workstation				
Total Revenue	15.5	15.9	26.7	31.4%
Workstation Shipments	135	270	570	105.6%
Host-Dependent				
Total Revenue	271.9	270.2	506.5	36.5%
Workstation Shipments	2,816	3,311	5,406	38.6%
Personal Computer				
Total Revenue	72.4	94.3	70.9	-1.1%
Workstation Shipments	10,664	14,360	11,040	1.7%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 37  
 TITLE: Company History  
 COMPANY: ICAD  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR
	====	====	====	=====
All Applications				
Total Revenue	.7	.9	1.1	21.9%
Workstation Shipments	6	7	9	22.2%
Mechanical				
Total Revenue	.7	.9	1.1	21.9%
Workstation Shipments	6	7	9	22.2%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.7	.9	1.1	21.9%
Workstation Shipments	6	7	9	22.2%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 38  
 TITLE: Company History  
 COMPANY: ICL  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	8.3	16.6	20.9	58.7%
Workstation Shipments	190	380	380	41.4%
Mechanical				
Total Revenue	3.7	7.5	9.9	62.9%
Workstation Shipments	86	171	180	45.1%
Facilities Design				
Total Revenue	.4	.8	.0	-100.0%
Workstation Shipments	10	19	0	-100.0%
Mapping				
Total Revenue	3.7	7.5	9.9	62.9%
Workstation Shipments	86	171	180	45.1%
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.4	.8	1.1	61.8%
Workstation Shipments	10	19	20	45.1%
Technical Workstation				
Total Revenue	8.3	16.6	20.9	58.7%
Workstation Shipments	190	380	380	41.4%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989



# 

TABLE NUMBER: 39  
 TITLE: Company History  
 COMPANY: InterCAD  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	1.8	2.3	6.5	92.1%
Workstation Shipments	202	260	336	29.0%
Mechanical				
Total Revenue	.0	.0	3.1	NA
Workstation Shipments	0	0	161	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.7	.9	1.3	38.8%
Workstation Shipments	78	100	67	-7.0%
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	1.1	1.4	2.1	38.1%
Workstation Shipments	124	160	108	-7.0%
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	1.8	2.3	6.5	92.1%
Workstation Shipments	202	260	336	29.0%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 40  
 TITLE: Company History  
 COMPANY: Intergraph  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	133.9	132.9	232.5	31.8%
Workstation Shipments	1,248	1,278	2,545	42.8%
Mechanical				
Total Revenue	37.5	38.5	69.7	36.4%
Workstation Shipments	349	457	763	48.0%
Facilities Design				
Total Revenue	58.9	60.7	97.6	28.8%
Workstation Shipments	548	484	1,069	39.7%
Mapping				
Total Revenue	33.5	32.6	47.4	19.0%
Workstation Shipments	311	328	519	29.2%
Electronic CAE				
Total Revenue	1.4	1.1	1.9	16.9%
Workstation Shipments	14	9	20	20.4%
IC Layout				
Total Revenue	1.4	.0	2.1	24.0%
Workstation Shipments	14	0	23	27.1%
PCB Layout				
Total Revenue	1.3	.0	13.7	219.9%
Workstation Shipments	12	0	150	250.5%
Technical Workstation				
Total Revenue	16.1	81.4	151.1	206.4%
Workstation Shipments	167	782	1,122	159.1%
Host-Dependent				
Total Revenue	115.2	48.2	77.3	-18.1%
Workstation Shipments	989	497	1,423	19.9%
Personal Computer				
Total Revenue	2.6	3.3	4.1	25.7%
Workstation Shipments	92	0	0	-100.0%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 41  
 TITLE: Company History  
 COMPANY: ISICAD  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	5.8	8.7	20.7	89.9%
Workstation Shipments	80	135	213	62.9%
Mechanical				
Total Revenue	.0	6.8	16.5	NA
Workstation Shipments	0	61	169	NA
Facilities Design				
Total Revenue	5.8	1.9	4.3	-13.7%
Workstation Shipments	80	74	44	-26.0%
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	5.8	8.6	18.7	80.1%
Workstation Shipments	80	77	213	62.9%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.1	2.1	NA
Workstation Shipments	0	58	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 42  
 TITLE: Company History  
 COMPANY: ISYKON Software  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	****	****	****	*****
All Applications				
Total Revenue	NA	5.8	7.5	NA
Workstation Shipments	NA	95	125	NA
Mechanical				
Total Revenue	NA	5.8	7.5	NA
Workstation Shipments	NA	95	125	NA
Facilities Design				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Mapping				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Electronic CAE				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
IC Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
PCB Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Technical Workstation				
Total Revenue	NA	3.5	5.0	NA
Workstation Shipments	NA	32	125	NA
Host-Dependent				
Total Revenue	NA	2.3	2.5	NA
Workstation Shipments	NA	63	0	NA
Personal Computer				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA

Source: Dataquest  
 April 1989

# Historical Company Data

TABLE NUMBER: 43  
 TITLE: Company History  
 COMPANY: ItalCad  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	=====	=====	=====	=====
All Applications				
Total Revenue	21.0	18.0	13.0	-21.5%
Workstation Shipments	210	180	220	2.4%
Mechanical				
Total Revenue	11.5	9.9	7.8	-17.9%
Workstation Shipments	115	98	132	7.3%
Facilities Design				
Total Revenue	6.3	5.4	3.2	-28.2%
Workstation Shipments	60	52	55	-4.4%
Mapping				
Total Revenue	3.2	2.7	1.9	-21.6%
Workstation Shipments	35	30	33	-3.3%
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	20.5	17.6	13.0	-20.6%
Workstation Shipments	202	173	220	4.4%
Host-Dependent				
Total Revenue	.5	.4	.0	-100.0%
Workstation Shipments	8	7	0	-100.0%
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 44  
 TITLE: Company History  
 COMPANY: Landmark Graphics  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR
	====	====	====	86-88
				=====
All Applications				
Total Revenue	1.8	2.1	2.4	16.8%
Workstation Shipments	14	16	19	17.0%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	1.8	2.1	2.4	16.8%
Workstation Shipments	14	16	19	17.0%
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	1.2	1.4	1.7	16.9%
Workstation Shipments	10	11	13	17.0%
Host-Dependent				
Total Revenue	.5	.6	.7	16.6%
Workstation Shipments	4	4	5	17.1%
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 45  
 TITLE: Company History  
 COMPANY: Logotec  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	5.5	6.8	8.5	24.3%
Workstation Shipments	32	40	50	24.4%
Mechanical				
Total Revenue	4.1	5.1	6.4	24.3%
Workstation Shipments	24	30	38	24.4%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	1.4	1.7	2.1	24.2%
Workstation Shipments	8	10	13	24.5%
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	5.5	6.8	8.5	24.3%
Workstation Shipments	32	40	50	24.4%

Source: Dataquest  
 April 1989

# Historical Company Data

TABLE NUMBER: 46  
 TITLE: Company History  
 COMPANY: LSI Logic  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	NA	3.0	5.5	NA
Workstation Shipments	NA	0	19	NA
Mechanical				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Facilities Design				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Mapping				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Electronic CAE				
Total Revenue	NA	3.0	5.0	NA
Workstation Shipments	NA	0	17	NA
IC Layout				
Total Revenue	NA	.0	.6	NA
Workstation Shipments	NA	0	2	NA
PCB Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Technical Workstation				
Total Revenue	NA	1.8	4.0	NA
Workstation Shipments	NA	0	19	NA
Host-Dependent				
Total Revenue	NA	1.2	1.5	NA
Workstation Shipments	NA	0	0	NA
Personal Computer				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA

Source: Dataquest  
 April 1989



# 

TABLE NUMBER: 47  
 TITLE: Company History  
 COMPANY: MacNeal-Schwendler  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	NA	6.8	8.4	NA
Workstation Shipments	NA	0	0	NA
Mechanical				
Total Revenue	NA	6.8	8.4	NA
Workstation Shipments	NA	0	0	NA
Facilities Design				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Mapping				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Electronic CAE				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
IC Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
PCB Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Technical Workstation				
Total Revenue	NA	.3	.8	NA
Workstation Shipments	NA	0	0	NA
Host-Dependent				
Total Revenue	NA	6.3	7.4	NA
Workstation Shipments	NA	0	0	NA
Personal Computer				
Total Revenue	NA	.2	.2	NA
Workstation Shipments	NA	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 48  
 TITLE: Company History  
 COMPANY: Manufacturing Consultants  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	.7	1.6	2.7	100.8%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	.7	1.6	2.7	100.8%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.2	.5	1.0	119.1%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.3	.7	1.2	88.3%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.1	.4	.5	101.9%
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 49  
 TITLE: Company History  
 COMPANY: Matra Datavision  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	36.1	41.3	50.3	18.1%
Workstation Shipments	530	450	428	-10.2%
Mechanical				
Total Revenue	35.3	41.3	50.3	19.3%
Workstation Shipments	520	450	428	-9.2%
Facilities Design				
Total Revenue	.7	.0	.0	-100.0%
Workstation Shipments	11	0	0	-100.0%
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	36.1	41.3	50.3	18.1%
Workstation Shipments	530	450	428	-10.2%
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# Historical Company Data

TABLE NUMBER: 50  
 TITLE: Company History  
 COMPANY: McDonnell Douglas  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	38.5	45.5	75.6	40.2%
Workstation Shipments	428	869	1,545	90.1%
Mechanical				
Total Revenue	29.1	34.1	52.6	34.5%
Workstation Shipments	313	652	1,165	92.9%
Facilities Design				
Total Revenue	9.4	5.7	21.5	51.3%
Workstation Shipments	115	109	355	76.1%
Mapping				
Total Revenue	.0	5.7	1.5	NA
Workstation Shipments	0	109	25	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	6.1	1.4	24.4	99.5%
Workstation Shipments	83	48	534	153.8%
Host-Dependent				
Total Revenue	30.4	44.2	51.2	29.8%
Workstation Shipments	297	821	1,011	84.5%
Personal Computer				
Total Revenue	1.9	.0	.0	-100.0%
Workstation Shipments	48	0	0	-100.0%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 51  
 TITLE: Company History  
 COMPANY: Mentor Graphics  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	43.7	54.3	78.3	33.9%
Workstation Shipments	543	1,290	986	34.8%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	35.9	37.9	52.5	21.0%
Workstation Shipments	462	1,012	763	28.5%
IC Layout				
Total Revenue	3.8	6.0	6.3	29.3%
Workstation Shipments	37	113	51	17.0%
PCB Layout				
Total Revenue	4.1	10.3	19.6	119.6%
Workstation Shipments	44	165	172	98.0%
Technical Workstation				
Total Revenue	42.5	53.9	78.3	35.8%
Workstation Shipments	526	1,285	986	37.0%
Host-Dependent				
Total Revenue	1.2	.3	.0	-100.0%
Workstation Shipments	17	5	0	-100.0%
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 52  
 TITLE: Company History  
 COMPANY: Norsk Data  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	15.0	29.0	43.5	70.2%
Workstation Shipments	83	303	484	141.6%
Mechanical				
Total Revenue	15.0	29.0	36.5	56.0%
Workstation Shipments	83	303	484	141.6%
Facilities Design				
Total Revenue	.0	.0	5.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	2.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	15.0	.0	17.4	7.6%
Workstation Shipments	83	0	205	57.3%
Host-Dependent				
Total Revenue	.0	29.0	25.2	NA
Workstation Shipments	0	303	243	NA
Personal Computer				
Total Revenue	.0	.0	.9	NA
Workstation Shipments	0	0	36	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 53  
 TITLE: Company History  
 COMPANY: Olivetti  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	10.1	12.9	16.8	28.9%
Workstation Shipments	655	2,425	2,933	111.6%
Mechanical				
Total Revenue	9.1	8.9	11.2	10.9%
Workstation Shipments	583	1,572	1,911	81.0%
Facilities Design				
Total Revenue	1.0	2.6	3.6	88.9%
Workstation Shipments	72	547	647	200.7%
Mapping				
Total Revenue	.0	1.0	1.4	NA
Workstation Shipments	0	211	258	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.4	.6	NA
Workstation Shipments	0	95	117	NA
Technical Workstation				
Total Revenue	5.1	.0	.0	-100.0%
Workstation Shipments	93	0	0	-100.0%
Host-Dependent				
Total Revenue	.0	1.2	1.2	NA
Workstation Shipments	0	85	84	NA
Personal Computer				
Total Revenue	5.1	11.7	15.6	75.8%
Workstation Shipments	562	2,340	2,850	125.1%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 54  
 TITLE: Company History  
 COMPANY: PAFEC  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	13.6	20.0	31.4	52.1%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	10.2	15.0	25.2	57.1%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	2.7	5.0	6.2	51.5%
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.7	.0	.0	-100.0%
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	3.8	16.0	26.6	164.2%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	9.8	4.0	4.8	-29.7%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989



# 

TABLE NUMBER: 55  
 TITLE: Company History  
 COMPANY: PDA Engineering  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	2.2	2.6	6.4	70.7%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	2.2	2.6	6.4	70.7%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.7	.9	2.6	86.0%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	1.5	1.7	3.9	62.4%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 56  
 TITLE: Company History  
 COMPANY: Philips International  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	1.7	2.1	2.5	22.4%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	1.7	2.1	2.5	22.4%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	1.7	2.1	2.5	22.4%
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 57  
 TITLE: Company History  
 COMPANY: Plessey Semiconductors  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	.4	.6	.8	32.3%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.4	.6	.8	32.3%
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.3	.4	.6	29.5%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.1	.1	.2	45.8%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	22.5%
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 58  
 TITLE: Company History  
 COMPANY: Prime Computer  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	280.6	382.3	421.1	22.5%
Workstation Shipments	2,224	2,769	3,974	33.7%
Mechanical				
Total Revenue	227.0	293.8	331.6	20.9%
Workstation Shipments	1,784	2,077	3,044	30.6%
Facilities Design				
Total Revenue	24.5	59.8	57.1	52.7%
Workstation Shipments	165	408	669	101.5%
Mapping				
Total Revenue	4.9	3.3	4.9	.7%
Workstation Shipments	32	29	39	11.7%
Electronic CAE				
Total Revenue	7.2	6.4	8.2	6.4%
Workstation Shipments	101	65	87	-7.5%
IC Layout				
Total Revenue	.0	.0	.1	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	17.0	19.0	19.3	6.5%
Workstation Shipments	142	190	134	-2.7%
Technical Workstation				
Total Revenue	70.5	198.0	268.0	94.9%
Workstation Shipments	545	1,863	2,985	134.0%
Host-Dependent				
Total Revenue	193.2	170.3	136.5	-15.9%
Workstation Shipments	1,050	691	846	-10.2%
Personal Computer				
Total Revenue	16.9	14.0	16.6	-.9%
Workstation Shipments	629	215	143	-52.3%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 59  
 TITLE: Company History  
 COMPANY: Racal-Redac  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	46.1	48.8	53.9	8.1%
Workstation Shipments	310	134	105	-41.8%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	5.9	10.1	NA
Workstation Shipments	18	21	22	11.7%
IC Layout				
Total Revenue	1.3	1.0	.0	-100.0%
Workstation Shipments	3	0	0	-100.0%
PCB Layout				
Total Revenue	44.8	42.0	43.9	-1.1%
Workstation Shipments	290	113	83	-46.6%
Technical Workstation				
Total Revenue	37.8	32.7	35.1	-3.6%
Workstation Shipments	310	134	105	-41.8%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	8.4	16.1	18.9	50.2%
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 60  
 TITLE: Company History  
 COMPANY: Radan Computational  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	3.4	4.2	5.1	23.0%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	2.9	3.5	4.3	23.0%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.5	.6	.8	22.9%
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	3.4	4.2	5.1	23.0%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 61  
 TITLE: Company History  
 COMPANY: RHV Software Systems  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	3.6	4.4	5.5	23.7%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	3.0	3.7	4.6	23.4%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.1	.1	.2	29.1%
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.1	.1	.2	29.1%
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.4	.5	.6	23.5%
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	3.6	4.4	5.5	23.7%
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 62  
 TITLE: Company History  
 COMPANY: Robocom  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	2.0	2.3	2.9	19.8%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	1.3	1.1	1.4	1.1%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.7	.8	1.2	36.5%
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.5	.1	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.1	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.1	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	2.0	2.3	2.9	19.8%
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989



# 

TABLE NUMBER: 63  
 TITLE: Company History  
 COMPANY: Rotring euroCAD  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	10.1	12.7	16.0	25.9%
Workstation Shipments	0	0	200	NA
Mechanical				
Total Revenue	6.1	7.6	9.6	25.9%
Workstation Shipments	0	0	120	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	4.0	5.1	6.4	25.9%
Workstation Shipments	0	0	80	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	5.1	6.4	8.0	25.9%
Workstation Shipments	0	0	60	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	5.1	6.4	8.0	25.9%
Workstation Shipments	0	0	140	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 64  
 TITLE: Company History  
 COMPANY: Schlumberger (Applicon)  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	****	****	****	*****
All Applications				
Total Revenue	57.8	63.5	67.2	7.9%
Workstation Shipments	613	1,390	936	23.5%
Mechanical				
Total Revenue	52.0	59.0	66.2	12.8%
Workstation Shipments	555	1,304	921	28.8%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	1.4	.0	.0	-100.0%
Workstation Shipments	15	0	0	-100.0%
PCB Layout				
Total Revenue	4.3	4.5	1.0	-51.8%
Workstation Shipments	44	86	15	-41.7%
Technical Workstation				
Total Revenue	.0	14.8	45.7	NA
Workstation Shipments	0	446	619	NA
Host-Dependent				
Total Revenue	57.8	48.7	21.5	-39.0%
Workstation Shipments	613	944	317	-28.1%
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 65  
 TITLE: Company History  
 COMPANY: Scientific Calc.  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	14.0	28.1	10.8	-12.1%
Workstation Shipments	43	46	35	-9.4%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.4	.0	.0	-100.0%
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.6	.0	.0	-100.0%
Workstation Shipments	1	0	0	-100.0%
PCB Layout				
Total Revenue	13.0	28.1	10.8	-8.9%
Workstation Shipments	42	46	35	-8.8%
Technical Workstation				
Total Revenue	3.9	8.4	7.0	34.0%
Workstation Shipments	10	30	32	80.1%
Host-Dependent				
Total Revenue	9.7	19.7	3.8	-37.5%
Workstation Shipments	33	17	4	-66.4%
Personal Computer				
Total Revenue	.4	.0	.0	-100.0%
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 66  
 TITLE: Company History  
 COMPANY: SDRC  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	3.2	6.1	12.6	99.0%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	3.2	6.1	12.6	99.0%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	1.9	3.7	8.6	112.3%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	1.3	2.4	4.0	77.4%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 67  
 TITLE: Company History  
 COMPANY: Secmai  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	11.6	10.4	9.7	-8.7%
Workstation Shipments	68	62	80	8.5%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	1.0	1.0	NA
Workstation Shipments	0	10	8	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	11.6	9.4	8.7	-13.4%
Workstation Shipments	68	52	72	2.9%
Technical Workstation				
Total Revenue	8.2	8.9	9.5	7.4%
Workstation Shipments	7	46	77	221.4%
Host-Dependent				
Total Revenue	3.4	1.6	.0	-100.0%
Workstation Shipments	61	16	0	-100.0%
Personal Computer				
Total Revenue	.0	.0	.2	NA
Workstation Shipments	0	0	3	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 68  
 TITLE: Company History  
 COMPANY: Siemens  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	50.0	100.0	105.6	45.3%
Workstation Shipments	540	1,080	2,238	103.6%
Mechanical				
Total Revenue	31.0	62.0	72.9	53.3%
Workstation Shipments	450	583	1,604	88.7%
Facilities Design				
Total Revenue	2.5	5.0	14.3	138.4%
Workstation Shipments	16	49	270	306.1%
Mapping				
Total Revenue	16.5	33.0	14.3	-7.0%
Workstation Shipments	73	448	270	92.0%
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	2.1	NA
Workstation Shipments	0	0	47	NA
PCB Layout				
Total Revenue	.0	.0	2.1	NA
Workstation Shipments	0	0	47	NA
Technical Workstation				
Total Revenue	.0	50.0	97.3	NA
Workstation Shipments	0	524	2,169	NA
Host-Dependent				
Total Revenue	50.0	50.0	8.3	-59.2%
Workstation Shipments	540	556	69	-64.2%
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 69  
 TITLE: Company History  
 COMPANY: Silicon Compiler Systems  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	.8	2.3	8.2	220.4%
Workstation Shipments	9	0	0	-100.0%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	2.5	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.8	2.3	5.8	168.1%
Workstation Shipments	9	0	0	-100.0%
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.3	1.3	8.2	451.4%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.5	1.0	.0	-100.0%
Workstation Shipments	9	0	0	-100.0%
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# Historical Company Data

TABLE NUMBER: 70  
 TITLE: Company History  
 COMPANY: Silicon Graphics  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR
	====	====	====	86-88
				=====
All Applications				
Total Revenue	NA	7.7	17.3	NA
Workstation Shipments	NA	220	421	NA
Mechanical				
Total Revenue	NA	7.7	17.3	NA
Workstation Shipments	NA	220	421	NA
Facilities Design				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Mapping				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Electronic CAE				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
IC Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
PCB Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Technical Workstation				
Total Revenue	NA	7.7	17.3	NA
Workstation Shipments	NA	220	421	NA
Host-Dependent				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Personal Computer				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA

Source: Dataquest  
 April 1989



# Historical Company Data

TABLE NUMBER: 71  
 TITLE: Company History  
 COMPANY: Silver-Lisco  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	9.3	11.2	9.0	-1.6%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	4.0	5.6	3.6	-4.5%
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	5.1	4.8	5.4	2.8%
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.2	.8	.0	-100.0%
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	2.8	8.2	7.4	62.9%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	6.5	3.0	1.6	-50.2%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# Historical Company Data

TABLE NUMBER: 72  
 TITLE: Company History  
 COMPANY: STI-Stressle  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	****	****	****	*****
All Applications				
Total Revenue	11.8	14.2	17.1	20.6%
Workstation Shipments	19	23	27	20.6%
Mechanical				
Total Revenue	8.2	9.9	12.0	20.6%
Workstation Shipments	11	13	16	20.6%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	3.5	4.3	5.1	20.7%
Workstation Shipments	8	10	12	20.5%
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	9.1	10.9	13.2	20.6%
Workstation Shipments	12	14	17	20.6%
Host-Dependent				
Total Revenue	2.7	3.3	4.0	20.7%
Workstation Shipments	7	8	10	20.5%
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 73  
 TITLE: Company History  
 COMPANY: Sun  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR
	====	====	====	=====
All Applications				
Total Revenue	6.3	16.0	33.9	132.6%
Workstation Shipments	290	694	1,614	135.9%
Mechanical				
Total Revenue	1.6	4.0	14.3	202.0%
Workstation Shipments	73	174	681	206.5%
Facilities Design				
Total Revenue	.0	.0	1.2	NA
Workstation Shipments	0	0	57	NA
Mapping				
Total Revenue	.0	.0	.9	NA
Workstation Shipments	0	0	43	NA
Electronic CAE				
Total Revenue	1.9	5.0	9.7	123.0%
Workstation Shipments	90	215	459	126.0%
IC Layout				
Total Revenue	1.9	5.0	4.6	53.1%
Workstation Shipments	90	215	215	54.6%
PCB Layout				
Total Revenue	.8	2.1	3.3	100.9%
Workstation Shipments	38	90	158	104.6%
Technical Workstation				
Total Revenue	6.3	16.0	28.8	114.4%
Workstation Shipments	290	694	1,451	123.6%
Host-Dependent				
Total Revenue	.0	.0	5.1	NA
Workstation Shipments	0	0	163	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 74  
 TITLE: Company History  
 COMPANY: Superdraft  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	1.8	2.2	2.9	25.4%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	1.8	2.2	2.9	25.4%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	1.8	2.2	2.9	25.4%
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 75  
 TITLE: Company History  
 COMPANY: Swanson Analysis  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	=====	=====	=====	=====
All Applications				
Total Revenue	2.0	2.4	2.7	15.3%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	1.9	2.4	2.7	18.9%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.1	.0	.0	-100.0%
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.2	.3	.5	84.4%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	1.6	1.9	1.8	7.6%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.3	.2	.3	8.9%
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 76  
 TITLE: Company History  
 COMPANY: Sycotronic AG  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	****	****	****	*****
All Applications				
Total Revenue	.8	1.1	1.4	30.5%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.3	.4	.5	30.5%
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.1	29.1%
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.5	.7	.9	30.6%
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.8	1.1	1.4	30.5%
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 77  
 TITLE: Company History  
 COMPANY: Synercom  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	1.7	1.0	1.2	-16.3%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	1.7	1.0	1.2	-16.3%
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	1.7	1.0	1.2	-16.3%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 78  
 TITLE: Company History  
 COMPANY: Sysscan  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	17.0	18.0	17.9	2.6%
Workstation Shipments	100	125	102	1.0%
Mechanical				
Total Revenue	3.2	3.4	.1	-81.5%
Workstation Shipments	43	24	0	-100.0%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	13.8	14.6	17.8	13.7%
Workstation Shipments	57	101	102	34.3%
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Most-Dependent				
Total Revenue	17.0	18.0	17.9	2.6%
Workstation Shipments	100	125	102	1.0%
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989



# 

TABLE NUMBER: 79  
 TITLE: Company History  
 COMPANY: T2 Solutions  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	NA	6.0	8.1	NA
Workstation Shipments	NA	50	118	NA
Mechanical				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Facilities Design				
Total Revenue	NA	6.0	8.1	NA
Workstation Shipments	NA	50	118	NA
Mapping				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Electronic CAE				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
IC Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
PCB Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Technical Workstation				
Total Revenue	NA	.0	5.1	NA
Workstation Shipments	NA	0	61	NA
Host-Dependent				
Total Revenue	NA	5.8	2.9	NA
Workstation Shipments	NA	45	57	NA
Personal Computer				
Total Revenue	NA	.2	.0	NA
Workstation Shipments	NA	5	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 80  
 TITLE: Company History  
 COMPANY: Technische Computer Systeme  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	----
All Applications				
Total Revenue	2.5	3.3	4.3	31.8%
Workstation Shipments	46	61	80	31.7%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	2.5	3.3	4.3	31.8%
Workstation Shipments	46	61	80	31.7%
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	2.5	3.3	4.3	31.8%
Workstation Shipments	46	61	80	31.7%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# Historical Company Data

TABLE NUMBER: 81  
 TITLE: Company History  
 COMPANY: Teradyne  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	=====	=====	=====	=====
All Applications				
Total Revenue	2.4	2.6	4.5	37.8%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	2.4	2.6	4.5	37.8%
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.4	.4	1.3	95.7%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	2.0	2.2	2.2	5.6%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.9	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 82  
 TITLE: Company History  
 COMPANY: Thom 6  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	3.0	3.0	2.6	-7.8%
Workstation Shipments	0	0	0	NA
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	3.0	3.0	2.6	-7.8%
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	2.7	2.7	1.8	-19.3%
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.3	.3	.8	62.3%
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 83  
 TITLE: Company History  
 COMPANY: Unisys  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	7.2	8.0	10.0	17.6%
Workstation Shipments	88	100	196	49.3%
Mechanical				
Total Revenue	7.2	8.0	10.0	17.6%
Workstation Shipments	88	100	196	49.3%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	2.2	6.4	7.5	86.0%
Workstation Shipments	26	74	134	125.9%
Host-Dependent				
Total Revenue	5.0	1.6	2.5	-29.9%
Workstation Shipments	61	26	61	-.0%
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# Historical Company Data

TABLE NUMBER: 84  
 TITLE: Company History  
 COMPANY: Valid  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	21.3	22.1	41.4	39.3%
Workstation Shipments	438	216	356	-9.8%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	19.6	20.3	34.1	31.8%
Workstation Shipments	413	210	330	-10.6%
IC Layout				
Total Revenue	1.5	1.6	3.1	43.3%
Workstation Shipments	22	5	9	-36.9%
PCB Layout				
Total Revenue	.2	.2	4.2	339.0%
Workstation Shipments	3	1	17	128.8%
Technical Workstation				
Total Revenue	19.4	20.4	39.7	43.2%
Workstation Shipments	368	216	332	-5.1%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	2.0	1.6	1.7	-7.1%
Workstation Shipments	69	0	24	-40.9%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 85  
 TITLE: Company History  
 COMPANY: Vision 3D  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR
	====	====	====	=====
All Applications				
Total Revenue	.8	1.0	1.2	24.0%
Workstation Shipments	10	12	15	25.0%
Mechanical				
Total Revenue	.8	1.0	1.2	24.0%
Workstation Shipments	10	12	15	25.0%
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.8	1.0	1.2	24.0%
Workstation Shipments	10	12	15	25.0%

Source: Dataquest  
 April 1989

# Historical Company Data

TABLE NUMBER: 86  
 TITLE: Company History  
 COMPANY: VLSI Technology  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	----	----	----	-----
All Applications				
Total Revenue	2.3	NA	7.1	75.5%
Workstation Shipments	8	NA	91	235.1%
Mechanical				
Total Revenue	.0	NA	.0	NA
Workstation Shipments	0	NA	0	NA
Facilities Design				
Total Revenue	.0	NA	.0	NA
Workstation Shipments	0	NA	0	NA
Mapping				
Total Revenue	.0	NA	.0	NA
Workstation Shipments	0	NA	0	NA
Electronic CAE				
Total Revenue	.0	NA	6.0	NA
Workstation Shipments	0	NA	77	NA
IC Layout				
Total Revenue	2.3	NA	1.1	-32.0%
Workstation Shipments	8	NA	14	29.9%
PCB Layout				
Total Revenue	.0	NA	.0	NA
Workstation Shipments	0	NA	0	NA
Technical Workstation				
Total Revenue	1.7	NA	6.0	86.6%
Workstation Shipments	8	NA	91	235.1%
Host-Dependent				
Total Revenue	.6	NA	1.1	36.4%
Workstation Shipments	0	NA	0	NA
Personal Computer				
Total Revenue	.0	NA	.0	NA
Workstation Shipments	0	NA	0	NA

Source: Dataquest  
 April 1989



# 

TABLE NUMBER: 87  
 TITLE: Company History  
 COMPANY: Westward  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	****	****	****	*****
All Applications				
Total Revenue	7.8	9.5	11.6	22.4%
Workstation Shipments	734	899	1,100	22.4%
Mechanical				
Total Revenue	7.4	9.0	11.0	22.4%
Workstation Shipments	697	854	1,045	22.4%
Facilities Design				
Total Revenue	.4	.5	.6	21.9%
Workstation Shipments	37	45	55	22.4%
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Host-Dependent				
Total Revenue	6.2	7.6	9.3	22.3%
Workstation Shipments	178	218	267	22.4%
Personal Computer				
Total Revenue	1.5	1.9	2.3	22.7%
Workstation Shipments	556	681	833	22.4%

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 88  
 TITLE: Company History  
 COMPANY: XAO Industrie  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	.9	1.1	1.5	31.6%
Workstation Shipments	46	61	80	31.7%
Mechanical				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	.9	1.1	1.5	31.6%
Workstation Shipments	46	61	80	31.7%
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Technical Workstation				
Total Revenue	.9	1.1	1.5	31.6%
Workstation Shipments	46	61	80	31.7%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 89  
 TITLE: Company History  
 COMPANY: Ziegler Instruments GmbH  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	====	====	====	=====
All Applications				
Total Revenue	16.9	8.1	14.1	-8.9%
Workstation Shipments	129	0	0	-100.0%
Mechanical				
Total Revenue	4.0	2.4	4.2	2.3%
Workstation Shipments	0	0	0	NA
Facilities Design				
Total Revenue	1.5	.9	1.8	9.7%
Workstation Shipments	0	0	0	NA
Mapping				
Total Revenue	1.1	.6	1.0	-6.5%
Workstation Shipments	0	0	0	NA
Electronic CAE				
Total Revenue	3.9	2.3	4.2	3.8%
Workstation Shipments	0	0	0	NA
IC Layout				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
PCB Layout				
Total Revenue	6.3	2.0	2.8	-33.5%
Workstation Shipments	129	0	0	-100.0%
Technical Workstation				
Total Revenue	3.0	.0	.0	-100.0%
Workstation Shipments	129	0	0	-100.0%
Host-Dependent				
Total Revenue	.0	.0	.0	NA
Workstation Shipments	0	0	0	NA
Personal Computer				
Total Revenue	13.9	8.1	14.1	.4%
Workstation Shipments	0	0	0	NA

Source: Dataquest  
 April 1989

# 

TABLE NUMBER: 90  
 TITLE: Company History  
 COMPANY: Zycad  
 REGION: Europe  
 UNITS: Millions of Dollars and Actual Units

	1986	1987	1988	CAGR 86-88
	****	****	****	****
All Applications				
Total Revenue	NA	5.4	5.3	NA
Workstation Shipments	NA	9	0	NA
Mechanical				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Facilities Design				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Mapping				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Electronic CAE				
Total Revenue	NA	5.4	5.3	NA
Workstation Shipments	NA	9	0	NA
IC Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
PCB Layout				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA
Technical Workstation				
Total Revenue	NA	.0	.1	NA
Workstation Shipments	NA	0	0	NA
Host-Dependent				
Total Revenue	NA	5.4	5.2	NA
Workstation Shipments	NA	9	0	NA
Personal Computer				
Total Revenue	NA	.0	.0	NA
Workstation Shipments	NA	0	0	NA

Source: Dataquest  
 April 1989