Dataquest

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March 27, 1995

Dear Dataquest CAD/CAM/CAE/GIS Client,

With a new database for our CAD/CAM/CAE/GIS data, we have also instituted new formats for our market share tables. Each book contains three types of tables: A, B, and C. The GIS market also has one D table.

- Type-A tables focus on software growth and present three years' software revenue for the top 30 vendors in any given market segment.
- Type-B tables are an alphabetical list of all software vendors in a given application/region and present three years' software revenue.
- Type-C tables focus on the 1994 market and present both revenue and shipment data for the top 30 vendors based on total factory revenue in the given market segment. Using type-C tables requires a clear understanding of Dataquest definitions, but we believe this format presents information frequently requested by clients.
- Type-D tables, which exist only for the GIS market, present three years' software content revenue. While we now follow these data providers, we do not include their revenue in the total software revenue.

In past years we have published only end-user shipment and revenue data; OEM revenue and shipments were excluded from all statistics books. For example, for workstation vendors we listed only revenue and shipments made directly to end users. Where workstation vendors shipped to CAD vendors, we reported that shipment only for the CAD vendor. As a result, it was always possible to add line items in any given table to reach the total at the bottom. This practice continues with the type-A and type-B tables.

The disadvantage of this methodology is that it does not directly indicate the relative influence of the various workstation vendors; that is, those with significant OEM business appear to have smaller revenue. The type-C tables adopt our new approach of including OEM software revenue, CPU revenue, and shipments in market share tables. As a result, the sum of vendors appears greater than the total. In fact, we keep careful track of OEM versus end-user revenue, and we do not count shipment or revenue more than once when calculating any total. Thus, all total market statements are correct, while individual vendor's data may include OEM revenue and shipments.

We also caution that summing revenue columns across the page may calculate to less than total factory revenue. In addition to software, CPU, and service revenue, we count revenue from host-dependent terminals and peripheral devices sold in a turnkey sale, neither of which are detailed in type-C tables.

We appreciate your patience as we evaluate table formats that serve you better. Please contact me at 408-437-8135 with any suggestion for improvements. As always, custom tables are available via inquiry by calling Suzanne Snygg at 408-437-8124.

Sincerely,

Linda Anderson

Linda Anderson

CAD/CAM/CAE/GIS Market Research Analyst

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December 1994

Dear Dataquest Client,

For more than 23 years, Dataquest has helped clients grow and prosper by supplying top-quality market intelligence on the information technology industry. We are proud to be your information partner through providing market analysis, competitive assessments, end-user preferences, and strategic insight for making crucial business and planning decisions.

The enclosed binder is for filing and storing the market research newsletters and reports that you will receive on an on-going basis throughout 1995 as part of your subscription to this research program. The research coverage and publications that you can expect to receive in 1995 are detailed on the enclosed program datasheet.

In addition, for those clients who wish to print and file the electronic newsletters and Dataquest Alerts that are part of this research service, an *Electronic News* binder is available on request. To order your copy, simply fill out the FaxBack form located in the binder pocket and fax it to us.

I look forward to working with you in our continuing process to improve the content, quality, and delivery of Dataquest's products and services. If you have questions about our research programs, publications delivery schedule, or on-going services, please call your analyst/account manager, or you may call me directly at (408) 437-8293.

Sincerely,

Jeffrey A. Byrne
Vice President
Worldwide Marketing

for Information Technology Companies

1995
Publications Schedule

CAD/CAM/CAE/GIS ASIA/PACIFIC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Perspective	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐
	Newsletters published on an event-driven basis											
Market Analysis	❐	❐	■	❐	■	❐	■	❐	■	❐	■	❐
	Newsletters published on an event-driven basis											
User and Distribution Studies	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐
	Newsletters published on an event-driven basis											
Competitive Dynamics	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐
	Newsletters published on an event-driven basis											
Focus Studies	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐
	Newsletters published on an event-driven basis											
Electronic Newsletters	■	■	■	■	■	■	■	■	■	■	■	■
	Published weekly											
Guides	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐	❐

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Program: CAD/CAM/CAE/GIS Asia/Pacific
Program Manager: Tamio Fukuda

1995 Publications Schedule

CAD/CAM/CAE/GIS Asia/Pacific

Complete Listing of 1995 Documents

Document Category	Document Type	Document Title	Arrival on Client Desk
Market Analysis	Market Statistics	Market Share	March 1995
	Market Statistics	Market Forecast	May 1995
	Market Statistics	Market Share Update	July 1995
	Market Statistics	Market Forecast Update	September 1995
	Market Trends Report	CAD/CAM/CAE/GIS Asia/Pacific Market Trends	November 1995
Electronic Newsletters	Online Newsletters	QuickTakes	Weekly via Internet

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To: Kimberlie Edwards Co.: Dataquest Incorporated

City: San Jose, California Country: U.S.A. Total Pages 1 of 1

Here's How to Order Your *Electronic News* Binder

Dataquest provides a separate binder called *Electronic News* to help you organize your printouts of the electronic newsletters and Dataquest Alerts that will be sent to you by this research program throughout the year. Although not all clients will print out electronic news bulletins or file faxes, the *Electronic News* binder is available by request for those who do.

To order your *Electronic News* binder, just fill out the form below and fax it back to us. We will mail your binder to you immediately.

Note: If you subscribe to more than one Dataquest research program, then indicate how many binders you need in the space provided below (plan on one binder per research program), and we'll send them to you in one shipment.

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Global Market Insight for Information Technology Companies

1995 RESEARCH PROGRAMS

From semiconductors to systems, software to services, telecommunications to document management, Dataquest's scope of expertise provides clients with a clear view of the relationships between information technology segments – relationships that can have a profound impact on making strategic business decisions.

Computer Systems and Peripherals

Computer Systems
- Client/Server Computing *Worldwide*
- Advanced Desktop, Workstation, and Client/Server Distribution Channels
- Computer and Client/Server Systems *Europe*
- PC and Low-End Computer Servers *Europe*
- UNIX and Open Systems *Europe*
- Computer Systems *Japan*

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- Tape Drives *Europe*

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1995 RESEARCH PROGRAMS

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Dataquest Catalyst Programs

Cross Technology Insight for:
- Financial Service Providers
- Government Agencies
- IT Business Strategy and Planning Organizations
- Publishing, Media, and Consulting Firms
- IS and Purchasing Organizations
- IT Supporting Organizations

Emerging Markets

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- Printers
- Personal Computers

Information Technology Market Opportunities
- China
- Asia/Pacific
- Latin America

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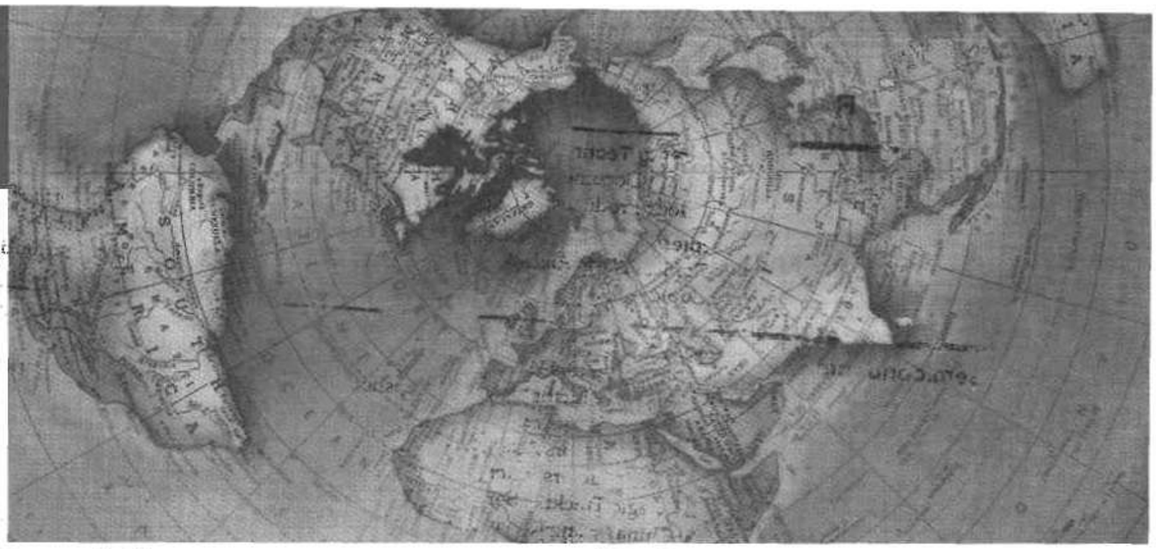
Global Market Insight for Information Technology Companies



CAD/CAM/CAE/GIS ASIA/PACIFIC

Dataquest's CAD/CAM/CAE/GIS Asia/Pacific program offers comprehensive coverage of CAD/CAM/CAE/GIS market opportunities in the fastest-growing, yet most complex marketplace in the world – the Asian market. The research service provides in-depth coverage of the dynamics of the individual Asia/Pacific markets including Japan, Taiwan, Singapore, Korea, Hong Kong, and China. It is an invaluable tool to assist strategic planners and tactical product managers to capitalize on emerging opportunities in the Asia/Pacific region.

Partnering to Provide Solutions

As a client, you have direct access to experienced analysts who can provide insights and advice on market dynamics, industry events, and competitive issues.

Inquiry Support

Personalized inquiry support is a primary component of your Dataquest annual subscription program.

Through an interactive approach, Dataquest analysts work with you to tailor the program to meet the unique needs of your organization.

Electronic Delivery

Dataquest offers a variety of electronic tools, known collectively as *Dataquest on the Desktop*, that have the power to deliver Dataquest insights directly to you, whether you are on the road or in the office.

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Clients have unlimited access to Dataquest's extensive print and online resource libraries worldwide.

Optional Custom Research

Should your needs exceed the scope of this program, Dataquest offers comprehensive primary research and consulting services.

Market Coverage

Dataquest provides software shipments, market share, revenue, and market forecasts for Asian CAD/CAM/CAE applications and players, including the following:

Major Data Points

- Total factory, hardware, and software revenue
- Service revenue
- Computer shipments
- Distribution channels

Regions Covered

- Japan
- Singapore
- Korea
- China
- Taiwan
- Hong Kong
- Total Asian Market

Platforms

- Personal computer
- Technical workstation
- Host-based

Applications

- Mechanical
- AEC
- GIS/mapping
- Electronic CAE
- IC layout
- PCB/MCM/hybrid

Dataquest

Worldwide Online, Multimedia, and Software Group

WHAT YOU WILL RECEIVE AS A CLIENT

CAD/CAM/CAE/GIS ASIA/PACIFIC

Market Analysis

Asian CAD/CAM/CAE/GIS Market Trends: This report includes detailed analysis from several perspectives on the forces driving Asian CAD/CAM/CAE/GIS markets. Trends and issues, changing end-user requirements, regional differences, and computer industry technology changes are discussed in relation to their impact on Asia/Pacific CAD market dynamics. High-level worldwide CAD/CAM/CAE/GIS market statistics balance the opinions presented in this expert analysis of Asia/Pacific CAD industry dynamics.

Asian CAD/CAM/CAE Market Statistics: This report provides the most reliable and comprehensive set of market data on markets for CAD software in Asia available anywhere. It presents comprehensive hardware, software, and service forecasts and market share for major Asian CAD companies and applications. A total of four reports are published each year. Two reports presenting market share and forecasts are published during the first half of the year; these are updated during the second half of the year. A multi-dimensional database is used to capture and analyze all elements of Dataquest's CAD/CAM/CAE/GIS market coverage. Customized analysis of this database is available to our clients.

Perspective

Timely newsletters presenting analysis and commentary on key events/issues in the Asian CAD software market. These documents are published on an event-driven basis throughout the year and include:

- **Dataquest Predicts**—Forward-looking analysis of Asian CAD/CAM /CAE/GIS software market dynamics that include Dataquest's predictions about future industry and technology directions
- **Research Briefs**—Analysis of industry news, mergers, announcements, and shows

QuickTakes

QuickTakes provides weekly summaries of the top news in the software, multimedia, and online information industries, accompanied by the "Dataquest Take." These documents are delivered electronically every Monday morning to Asian CAD service clients at any e-mail box accessible via the Internet (including AppleLink, cc:Mail, CompuServe, IBM Mail, MCI Mail, AT&T Mail, and so on).

Weekly delivery via the Internet

Dataquest Alerts

News and commentary on late-breaking Asian CAD/CAM/CAE/GIS industry events delivered by fax and/or email.

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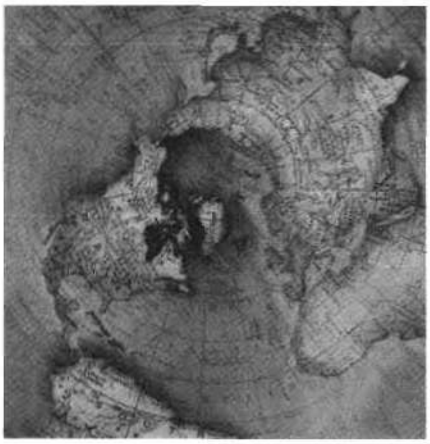
Market Analysis

Dataquest



Dataquest

CAD/CAM/CAE and GIS Japan Forecast Update

Market Statistics

Program: CAD/CAM/CAE/GIS Asia/Pacific
Product Code: CCAM-AP-MS-9504
Publication Date: December 4, 1995
Filing: Market Analysis

CAD/CAM/CAE and GIS Japan Forecast Update

Market Statistics

Program: CAD/CAM/CAE/GIS Asia/Pacific
Product Code: CCAM-AP-MS-9504
Publication Date: December 4, 1995
Filing: Market Analysis

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Note: All tables show estimated data.

CAD/CAM/CAE and GIS Japan Forecast Update

Fluctuating exchange rates once again masked the true market performance in the 1994 CAD/CAM/CAE and GIS market. Japanese CAD/CAM/CAE and GIS total factory revenue grew 4.8 percent from 1993 to 1994 when measured in U.S. dollars, contrary to what would be expected given the country's prolonged recession. However, the dollar depreciated against the yen at a rate of 8.2 percent so that when measured in yen, Japanese CAD/CAM/CAE and GIS total factory revenue declined 3.8 percent from 1993 to 1994.

Less dramatically, European CAD/CAM/CAE and GIS total factory revenue grew 9.9 percent from 1993 to 1994 when measured in U.S. dollars. With the dollar depreciating 1.5 percent, European CAD/CAM/CAE and GIS total factory revenue grew a lower 8.2 percent from 1993 to 1994 when measured in ECU. Table 1 shows the impact of currency fluctuation on the CAD/CAM/CAE and GIS software market.

Looking ahead, currency fluctuations will continue to be felt in all global markets. The dollar has continued to weaken during the early months of this year so that if we were to assume a stable currency for the remainder of the year, 1995 would end with the dollar depreciating 4.2 percent against the yen and 7.8 percent against the ECU (see Table 2). Although Dataquest does not forecast currency exchange rates, we do forecast with the best information available. The exchange rate is calculated as the simple arithmetic mean of the 12 average monthly rates for each country. For the purpose of this forecast, Dataquest assumes the September exchange rate will remain stable in the future.

This document contains Dataquest's detailed forecast information for the CAD/CAM/CAE and GIS industry. Included are the following:

- Five-year historical data
- Five-year forecast data

More detailed data is available through Dataquest's Client Inquiry service, which can provide custom analysis of the multidimensional database.

Changes to Our Forecast Structure

Dataquest's CAD/CAM/CAE and GIS forecast is based upon the updated market share data gathered before the end of 1994 and updated throughout 1995. In order to better serve you, the new CAD/CAM/CAE and GIS database has been restructured as follows:

- Japan is now tracked as a region separate from Asia/Pacific.
- Asia/Pacific now includes China, Hong Kong, Korea, Singapore, Taiwan, and Rest of Asia (Australia, New Zealand, India, and Southeast Asia).

Table 1
CAD/CAM/CAE and GIS Revenue Growth Comparison
(U.S. Dollars versus Local Currency for Both Europe and Japan)

Revenue by Region	1993	1994	Forecast 1999	Growth (%) 1993-1994	CAGR (%) 1994-1999
Europe ($M)					
Software Revenue	1,628.29	1,824.12	3,276.03	12.0	12.4
Hardware Revenue	2,421.88	2,604.55	5,022.05	7.5	14.0
Service Revenue	996.57	1,115.23	1,976.19	11.9	12.1
Total Factory Revenue	5,046.74	5,543.91	10,274.27	9.9	13.1
ECU/U.S.$ Exchange Rate*	0.86	0.84	0.77	-1.5	-1.8
Europe (ECU Millions)					
Software Revenue	1,394.80	1,538.83	2,522.54	10.3	10.4
Hardware Revenue	2,074.58	2,197.20	3,866.98	5.9	12.0
Service Revenue	853.67	940.81	1,521.67	10.2	10.1
Total Factory Revenue	4,323.04	4,676.84	7,911.19	8.2	11.1
Japan ($M)					
Software Revenue	1,203.33	1,315.70	2,013.89	9.3	8.9
Hardware Revenue	2,148.02	2,174.59	2,893.95	1.2	5.9
Service Revenue	756.90	813.74	1,074.17	7.5	5.7
Total Factory Revenue	4,108.24	4,304.03	5,982.01	4.8	6.8
Japan/U.S.$ Exchange Rate*	110.85	101.81	99.73	-8.2	-0.4
Japan (Yen Millions)					
Software Revenue	133,388.69	133,951.14	200,845.20	0.4	8.4
Hardware Revenue	238,107.55	221,394.71	288,613.32	-7.0	5.4
Service Revenue	83,902.25	82,847.36	107,126.86	-1.3	5.3
Total Factory Revenue	455,398.49	438,193.21	596,585.38	-3.8	6.4
North America ($M)					
Software Revenue	1,758.41	1,929.06	3,711.42	9.7	14.0
Hardware Revenue	2,345.76	2,512.99	4,526.12	7.1	12.5
Service Revenue	1,036.93	1,176.56	1,916.85	13.5	10.3
Total Factory Revenue	5,141.36	5,618.72	10,154.40	9.3	12.6
Worldwide ($M)					
Software Revenue	4,890.91	5,418.96	9,776.21	10.8	12.5
Hardware Revenue	7,351.48	7,798.97	13,510.08	6.1	11.6
Service Revenue	2,968.24	3,313.93	5,319.26	11.6	9.9
Total Factory Revenue	15,210.89	16,531.96	28,605.55	8.7	11.6

*Assuming a stable currency, the 1999 exchange rate is the September 1995 exchange rate.
Source: Dataquest (October 1995)

Table 2
Foreign Currency versus the U.S. Dollar

		Actual					Current		Year-to-Year Change (%)					
Country	Currency	1990	1991	1992	1993	1994	1995	1996	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996
Austria	Schilling	11.36	11.67	10.95	11.65	11.40	10.32	10.05	2.73	-6.2	6.4	-2.1	-9.5	-2.6
Belgium	Franc	33.41	34.13	32.02	34.67	33.66	30.16	29.38	2.16	-6.2	8.3	-2.9	-10.4	-2.6
Denmark	Krone	6.18	6.39	6.02	6.49	6.35	5.70	5.54	3.40	-5.8	7.8	-2.2	-10.2	-2.8
Finland	Markka	3.82	4.04	4.45	5.73	5.21	4.39	4.27	5.76	10.1	28.8	-9.1	-15.7	-2.7
France	Franc	5.44	5.64	5.27	5.67	5.54	5.04	4.92	3.68	-6.6	7.6	-2.3	-9.0	-2.4
Germany	D-Mark	1.62	1.66	1.56	1.66	1.62	1.45	1.43	2.47	-6.0	6.4	-2.4	-10.8	-1.0
Italy	Lira	1,197.22	1,238.93	1,227.75	1,577.85	1,609.34	1,625.01	1,616.00	3.48	-0.9	28.5	2.0	1.0	-0.6
Netherlands	Guilder	1.82	1.87	1.75	1.86	1.82	1.64	1.64	2.75	-6.4	6.3	-2.2	-9.9	0.2
Norway	Krone	6.25	6.49	6.18	7.11	7.04	6.42	6.25	3.84	-4.8	15.0	-1.0	-8.8	-2.6
Spain	Peseta	102.03	103.81	101.90	127.87	133.48	125.35	123.48	1.74	-1.8	25.5	4.4	-6.1	-1.5
Sweden	Krona	5.92	6.04	5.81	7.82	7.70	7.30	6.95	2.03	-3.8	34.6	-1.5	-5.2	-4.8
Switzerland	Franc	1.39	1.43	1.40	1.48	1.37	1.20	1.16	2.88	-2.1	5.7	-7.4	-12.7	-3.0
United Kingdom	Pound	0.56	0.57	0.57	0.67	0.65	0.64	0.63	1.79	0	17.5	-3.0	-1.5	-1.6
Europe Average	ECU	0.79	0.81	0.77	0.86	0.84	0.78	0.77	2.27	-4.9	11.4	-1.5	-7.8	-1.0
China	Renminbi	4.79	5.33	5.51	5.76	8.54	8.32	8.32	11.27	3.4	4.5	48.3	-2.6	0
Hong Kong	Dollar	7.79	7.77	7.74	7.74	7.73	7.74	7.73	-0.26	-0.4	0	-0.1	0.1	-0.1
Japan	Yen	144.05	134.59	126.34	110.85	101.56	97.34	99.73	-6.57	-6.1	-12.3	-8.4	-4.2	2.5
Korea	Won	242.70	730.67	782.41	799.42	805.80	773.20	768.20	201.06	7.1	2.2	0.8	-4.0	-0.6
Singapore	Dollar	1.81	1.73	1.63	1.62	1.53	1.42	1.42	-4.42	-5.8	-0.9	-5.3	-7.2	0
Taiwan	Dollar	26.64	26.49	24.93	26.15	26.45	27.50	27.06	-0.56	-5.9	4.9	1.1	4.0	-1.6

Source: Dataquest (October 1995)

- Service is divided into hardware service and software service.
- Platforms have been replaced by operating systems, to include UNIX, host, Windows NT and PC.

This restructuring is reflected in the forecast. The net result is a better history from which to forecast. Unfortunately, because of this restructuring, the data will not match the data in Dataquest's previously published market share documents. In addition to some shifting of revenue to allow for the restructuring, several company changes were made as follows:

- Work in the new database resulted in the loss of some companies' European and Asian revenue, most notably Altera. The revenue for these companies has been corrected and is available through your inquiry privilege.
- UniCAD had inadvertently been excluded from our market share database and was therefore not included in previously published market share documents. It has been added.
- Mentor Graphics restated its revenue for 1992 and 1993, correcting an error in its reporting by shifting revenue from the year of order to the year of sale and realigning its sales to our changed subapplication definitions.

Worldwide Forecast Assumptions

The following paragraphs describe the main forces driving the CAD/CAM/CAE and GIS worldwide software forecast.

Mechanical Forecast Assumptions

The mechanical CAD/CAM/CAE market, which grew 9.7 percent in 1994, is expected to reach a market size of $3.9 million in five years. The market will be fueled by a complex and rich blend of emerging technologies, regional growth, and new applications for CAD technology.

Emerging Technologies

Topping the list of emerging technologies is product data management. This market has clearly begun to take off, not only in Europe and the United States but in Japan and Korea as well. Within the past year, we have seen pilot programs begin to move to full-scale production, support for new client platforms (Windows NT, Windows), integration with materials resource planning (MRP) systems, and an emergence of a "lite" product data management (PDM) category. PDM will be one of the significant drivers of the mechanical CAD market through 1999. Farther down the road, we expect growth in the industry to come from other emerging technologies, including generative numerical control (NC) software, analysis, conceptual design, and simulation/optimization software.

Regional Growth

The outlook for the European markets is brighter than it has been for the last few years. The European economy as a whole continues to emerge slowly from its recession, and many of the European industries have begun a major restructuring of their information technology (IT) investment. Tool purchases by automotive companies and their supplier bases will lead to higher growth for both software and hardware revenue in the mechanical CAD/CAM/CAE sector in Europe.

Mechanical CAD/CAM/CAE growth in Japan is expected to undergo a significant shift in platform usage over our forecast period. Currently, the UNIX platform dominates the mechanical sector in Japan, despite the fact the Japanese mechanical market still places a heavy emphasis on 2-D drafting instead of 3-D/solid modeling. We expect this drafting orientation to persist, and in the next five years we anticipate a significant shift to more Windows NT and PC-based operating systems, at the expense of UNIX. This shift will not begin in earnest until late 1996, when Japan-specific versions of mechanical software on Windows NT are more widely available.

New Applications for CAD Technology

In 1994, we saw the beginning of new applications for mechanical CAD technology. Growth is picking up in nontraditional industries (those industries outside of aerospace and automotive). We expect this trend to continue as mechanical modeling, analysis, design, and simulation software become more user-friendly. Closely linked to the use of mechanical CAD in new arenas is the availability of such software on lower-cost platforms like Windows NT and the use of object technology to create customized industry- or application-specific solutions.

AEC Forecast Assumptions

The Impact of Windows NT

Intergraph dominates the UNIX market in North America, and the company's shift to Windows NT will cause both the collapse of UNIX sales in North America and the gradual erosion of UNIX in Europe. Windows NT will get a boost in 1995, driven by frustrated PC users who demand high performance and who cannot wait for Windows 95 to solve their requirements.

Factors that should contribute to the long-term expansion of the AEC CAD market are as follows:

CAD Is Becoming a Business Requirement

Large design firms are growing at the expense of smaller firms. These large end users increasingly require their employees and suppliers to adopt automation tools in the design and construction process. Smaller design firms must increasingly buy CAD systems or risk being dropped from consideration as a partner.

CAD purchases are increasingly justified as a competitive advantage in both sales and design reviews. Electronic design data is also required downstream by the designer's client, from the federal government down to the small commercial developer. Also, a significant pool of untapped users still exists. The current relatively low market penetration of AEC CAD systems should allow steady worldwide growth during the next five years, despite constant volatility in demand for the buildings and infrastructure to be designed.

New Features in AEC CAD Products Are Achievable

Better, lower-cost visualization tools will be in increasing demand as sales and communication tools. Data and database functions (versus graphics functions) are increasing in importance in AEC design systems, creating opportunities to sell users significant new functionality. Some vendors will create products that foster communication in the entire design, construction, and maintenance process, products that will increase the payoff in CAD investments.

The following trends will *inhibit* growth in the AEC CAD industry:

Design Is Only Part of the Problem

AEC's one-design-one-build structure means CAD provides fewer economic benefits to these users than does the one-design-build-many structure of manufacturing. Construction, which is essentially a prototype build, is fraught with uncertainties and delays that are not well addressed by existing AEC systems. Design tools can only thrive in the AEC structure when they support more of the entire business problem.

Poor Cooperation among Users

Users are poorly organized to take advantage of improved products, partly because of competition between engineering constructors and partly because designs are often split among several different companies representing different and competing aspects of the design process. New approaches to the design and construction process are needed to allow users to take full advantage of CAD tools.

GIS/Mapping Forecast Assumptions

The Impact of Windows NT

Intergraph's move to Windows NT at the expense of UNIX will quickly make PC-based operating systems the dominant revenue stream in North America. In the long term, the GIS UNIX market is highly subject to erosion by Windows NT because of the appeal of better integration of GIS and Windows-based productivity tools.

Factors that should contribute to the long-term expansion of the GIS market are as follows:

There Exists an Abundant Supply of Prospective Buyers

Penetration is still moderately low among core users. Bread-and-butter prospects in government and utilities are charged with maintaining information on land and assets in perpetuity. Many of these prospective buyers are still using paper maps that will degrade over time. This creates a certain inevitability to moving from paper maps to computer-based systems.

New Technologies Will Drive Growth

Faster, cheaper computers will be continually leveraged to support new software products. Widespread computer-industry developments in open, distributed systems supporting high-speed networking will make it possible for GIS technology to broadly expand its user base. Lower-cost, higher-resolution satellite imagery holds the potential to drive another explosion in GIS market growth among users who cannot afford aerial photography. Advances in aerial photography, global positioning systems (GPSs), and laser range finders are making it possible to create GISs significantly cheaper, more accurate, and more complete than existing paper maps, giving experienced users some compelling reasons to reinvest. Portable and pen-based computers are bringing GIS to new users in field operations.

Data Will Drive Growth

The GIS business market is driving high growth on PCs. However, we see a wide band of uncertainty surrounding the clearly growing revenue opportunity from new applications. Several new applications in GIS are destined to become relatively low-revenue producing features in other software programs (and market), rather than standalone products in the GIS market. At the same time, data is increasing in value relative to software in this low-end market.

GIS has attained a certain indispensability, particularly among federal users and in utilities. As a result, users are beginning to expect to share the data in their various GIS systems. Within three years, we expect data to be readily exchangeable across different systems. At that point, shareable data will help drive market growth.

Several factors seriously constrain the long-term expansion of the GIS market, as follows:

High Cost of Entry Remains a Barrier

There will remain an uncertain, but certainly high, cost of creating a working GIS system in traditional environments. No magic will emerge to create a low-cost, meaningful data set for mainstream customers in government and utilities. Data conversion will remain costly because the significant cost of correcting prior errors and omissions on paper maps is inevitably bundled into the cost of "conversion."

Price Pressures Inhibit Growth

Price pressure will hold down total revenue. Innovation is the only way to maintain prices in any software industry, and GIS vendors will struggle in their attempt to create compelling new applications and improved investment payoff for customers.

Electronic Design Automation

The EDA software market grew 16.8 percent in 1994. Over the next five years, growth will continue to be fueled by continually increasing design complexity and ever-higher speeds.

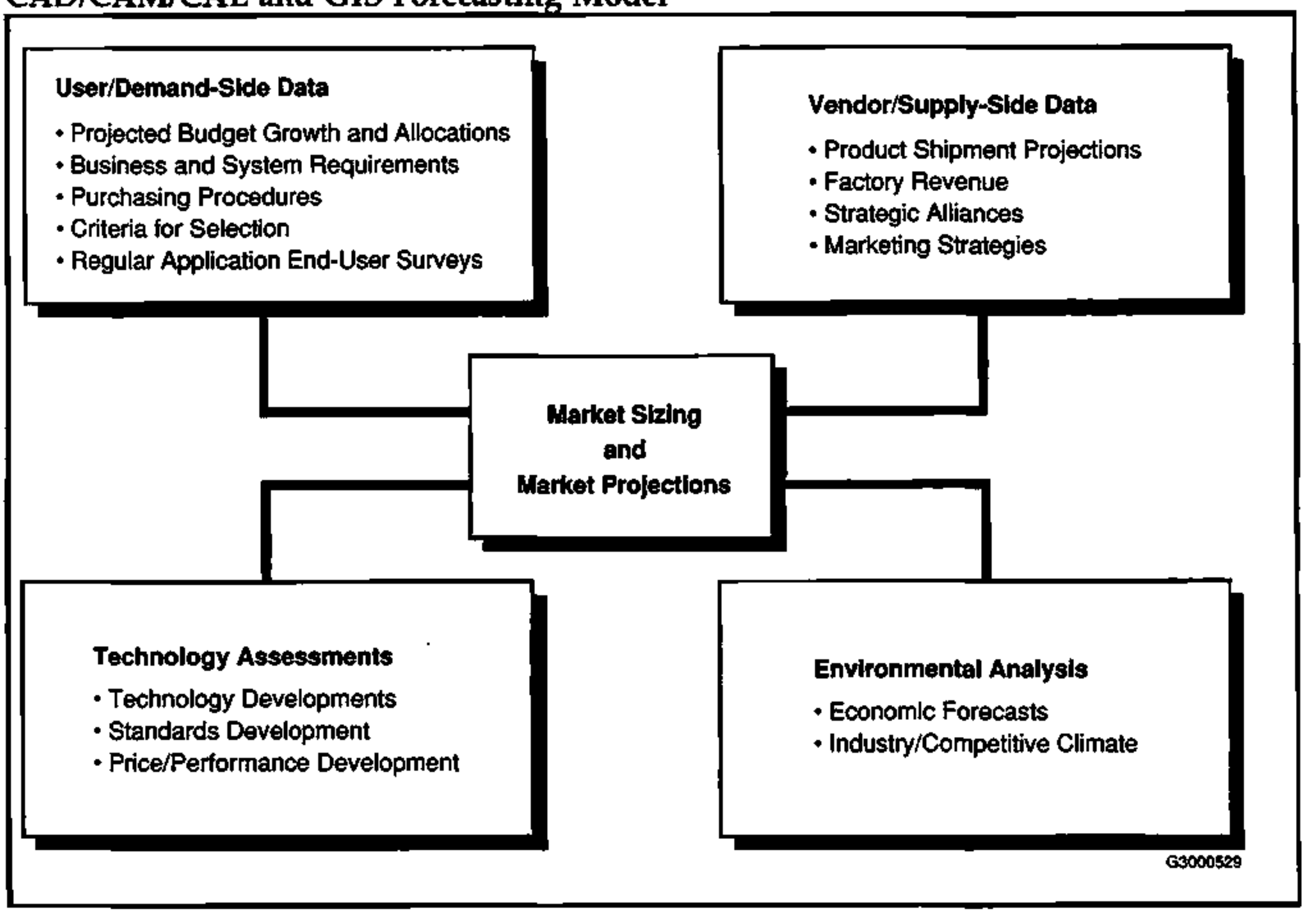
Electronic CAE

The demands today's tools place on CPU processing speed and memory size are reversing the process of equalization and driving the sales of UNIX-class tools. Equalization (PC-based tools becoming more expensive as UNIX-based tools fall in price) was either caused by the stagnation of the design challenge or, more likely, the stagnation in tool development. Design complexity is forcing a large-scale swap: gate-level users are swapping up to registered transfer (RT)-level while RT-level users are swapping up to electronic system (ES)-level tools. RT-level tools will begin to appear on Windows NT, competing with the UNIX-based tools while the ES-level tools will remain UNIX-based. Meanwhile, low-end design—still manageable by PC-based tools—is shifting to Asia/Pacific and driving PC growth in that region. The main inhibitor to growth in CAE tools is the engineering learning curve.

IC Layout

The IC-layout market grew as expected, 20 percent from 1993 to 1994, after several very sleepy years. Design complexity and high speed is forcing replacement of obsolete tools, driving this high growth. This is primarily a replacement market of very high-cost tools and very few players. The ensuing frenzy for market share is the result. The few PC-

Figure 1
CAD/CAM/CAE and GIS Forecasting Model



Source: Dataquest (May 1995)

based tools in this market are being replaced by UNIX-class tools in North America and Japan. Growth in the very few PC-based tools is in Europe (including eastern Europe) and Asia/Pacific. It is yet unclear whether Windows NT will be able to penetrate the IC Layout market.

PCB/MCM/Hybrid

The 3.3 percent growth in the printed circuit board (PCB) market comes as a surprise, given the forecast negative 2 percent growth from 1993 to 1994. The strong yen masked a decline in PCB growth (in yen) in Japan, where half of PCB sales are.

Organizational manufacturing models are driving changes in the PCB market. As manufacturing organizations are moving to Asia/Pacific (from both North America and Japan), the low-speed designing is following, driving PC sales in that region. In North America, Europe, and Japan, high-speed board design is moving from manufacturing into engineering departments that are traditionally UNIX-based. Where new engineering environments are being created for RT-level designs, the opportunity for Windows NT to take over both the CAE environment and the PCB environment exists.

Forecast Methodology

Fundamental to the way Dataquest conducts its research is the underlying philosophy that the best data and analyses come from a well-balanced program. This program includes the following: balance between primary and secondary collection techniques; balance between supply-side and demand-side analysis; balance between focused, industry-specific research and coordinated, "big-picture" analysis aided by integration of data from the more than 25 separate high-technology industries Dataquest covers; and balance between the perspectives of experienced industry professionals and rigorous, disciplined techniques of seasoned market researchers.

Dataquest also analyzes trends in the macro environment, which can have major influences on both supply-side and demand-side forecasting. In addition to demographics, analysts look at gross national product (GNP) growth, interest rate fluctuation, business expectations, and capital spending plans. In the geopolitical arena, the group looks at trade issues, political stability or lack thereof, tariffs, nontariff barriers, and such factors as the effect on Europe of the events of 1994.

Figure 1 shows the CAD/CAM/CAE and GIS forecasting model. The overall forecasting process uses a combination of techniques such as time series and technological modeling. Market estimates and forecasts are derived using the following research techniques:

- Segment forecasting—Individual forecasts are derived for each application segment tracked by the CAD/CAM/CAE and GIS group. Specifically, each application, segmented by region and platform, is forecast and rolled up. In this way, each application segment incorporates its own set of unique assumptions.

- Demand-based analysis—Market growth is tracked and forecast in terms of the present and anticipated demand of current and future users. This requires the development of a total available market model and a satisfied available market figure to assess the levels of penetration accurately. Dataquest analysts also factor in the acceptance or ability for users to consume new technology.
- Capacity-based analysis—This method involves identifying future shipment volume constraints. These constraints, or "ceilings," can be the result of component availability, manufacturing capacity, or distribution capacity. In any case, capacity limitations are capable of keeping shipments below the demand level.

Segmentation Definitions

This section lists the definitions specific to this document. The following paragraphs define the segments.

Applications

- Mechanical—The mechanical segment refers to computer-aided tools used by engineers, designers, analysts, technicians, and draftspeople working predominantly in the discrete manufacturing industries, but includes government and education. Users of mechanical CAD/CAM/CAE tools work in all departments across the typical organization, with a majority found in product design, advanced engineering, and manufacturing engineering. Common design applications include conceptual design, industrial design, structural or thermal analysis, detail design, and electromechanical design (the mechanical part of design with electrical or electronic components and mechanisms). Common manufacturing applications include tool and fixture design, numerical control part programming, offline robotics programming, and interface to quality-control systems. Management tools for database control and distribution are included in this segment, as well as user-defined application programming.
- Architecture, Engineering, and Construction (AEC)—The AEC segment covers the use of computer-aided tools by architects, contractors, plant engineers, civil engineers, and other people associated with these disciplines to aid in designing and managing buildings, industrial plants, ships, and other types of nondiscrete entities.
- Geographic Information Systems (GIS)/Mapping—GIS is computer-based technology, and the segment is composed of hardware, software, and data used to capture, edit, display, and analyze spatial (tagged by location) information.
- Electronic Design Automation (EDA)—The EDA segment covers computer-based tools used to automate the process of designing an electronic product, including printed circuit boards, ICs, and systems. EDA includes ECAE, IC layout, and PCB/hybrid/MCM, as follows:
  - Electronic computer-aided engineering (ECAE)—These are computer-aided tools used in the engineering or design phase of electronic products (as opposed to the physical layout phase of the

product). Examples of ECAE applications are schematic capture and simulation.

- IC layout—This is a software application tool used to create and validate the physical implementation of an IC. The IC layout category comprises polygon editors, symbolic editors, placement and routing (gate array, cell, and block), design verification tools (DRC/ERC/logic-to-layout), compilers, and module development tools.
- PCB/hybrid/MCM—This segment covers products used to create the placement and routing of the traces and components laid out on a printed circuit board. Also included in this category are thermal analysis tools.

Regions

The following bullets define the regions.

- North America—North America includes United States, Mexico, and Canada.
- Europe—Europe includes the United Kingdom, Scandinavia, Benelux, France, Germany, Italy, Spain, Austria/Switzerland, Russia, central Europe, and the rest of Europe.
- Japan
- Asia—Asia includes Singapore, Taiwan, Korea, China, Hong Kong, and the rest of Asia (Australia, India, and Southeast Asia).
- Rest of World—Rest of World includes all other countries and regions, including Africa, the Middle East, Central America, and South America.

Operating Systems

The following paragraphs define the operating systems.

UNIX. UNIX includes all UNIX variants and older workstation operating systems.

Host. Host includes minicomputer and mainframe operating systems in which external workstations' functions are dependent on a host computer.

Windows NT. Windows NT is the Microsoft operating system.

PC. PC includes DOS, Windows, Windows 95, OS/2, and Apple operating systems.

Line Items

Line item definitions are as follows:

- Average selling price (ASP) is defined as the average price of a product, inclusive of any discounts.
- CPU revenue is the portion of revenue derived from a system sale that is related to the value of the CPU.

- CPU shipment is defined as the number of CPUs delivered.
- CPU installed base is defined as the total number of CPUs in active, day-to-day use.
- Unit shipment is defined as the number of products delivered (that is, seats).
- Seats are defined as the number of possible simultaneous users.
- Installed seats are defined as the total number of seats in active, day-to-day use.
- Hardware revenue is defined as the sum of the revenue from the hardware system components: CPU revenue, terminal revenue, and peripherals revenue.
- Peripherals revenue is defined as the value of all the peripherals from turnkey sale. (Peripherals in this category typically are input and output devices.)
- Terminal revenue is defined as revenue derived from the sale of terminals used to graphically create, analyze, or manipulate designs. The term is applicable only to the host systems.
- Software revenue is revenue derived from the sale of application software.
- Service revenue is defined as revenue derived from the service and support of CAD/CAM/CAE or GIS systems. Service is followed as software service and hardware service.
- Total factory revenue is defined as the amount of money received for goods measured in U.S. dollars and is the sum of hardware, software, and service revenue.

Table A-1
CAD/CAM/CAE/GIS Software History and Forecast
Top Level Worldwide Forecast, All Applications, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
Software Revenue ($M)									
Worldwide, All Operating Systems	4,583	4,891	5,419	6,224	6,942	7,763	8,691	9,776	12.5
Worldwide									
UNIX	3,163	3,401	3,796	4,249	4,630	5,007	5,439	5,913	9.3
Windows NT	-	5	106	356	568	872	1,201	1,621	72.4
Personal Computer	1,066	1,190	1,327	1,484	1,652	1,827	2,012	2,214	10.8
Host/Proprietary	354	295	190	136	92	58	39	27	-32.1
All Operating Systems									
North America	1,599	1,759	1,929	2,170	2,480	2,863	3,279	3,711	14.0
Europe	1,668	1,628	1,824	2,178	2,410	2,650	2,926	3,276	12.4
Japan	1,117	1,203	1,316	1,445	1,563	1,694	1,840	2,014	8.9
Asia/Pacific	137	207	255	320	364	415	484	587	18.2
Rest of World	61	94	95	112	125	141	161	187	14.5
Year-to-Year Software Revenue Growth Rate (%)									
Worldwide, All Operating Systems		6.7	10.8	14.9	11.5	11.8	11.9	12.5	
Worldwide									
UNIX		7.5	11.6	11.9	9.0	8.1	8.6	8.7	
Windows NT		NA	1,950.4	234.2	59.8	53.4	37.8	35.0	
Personal Computer		11.6	11.5	11.8	11.3	10.6	10.1	10.1	
Host/Proprietary		-16.7	-35.6	-28.3	-32.5	-36.6	-32.2	-30.4	
All Operating Systems									
North America		10.0	9.7	12.5	14.3	15.5	14.5	13.2	
Europe		-2.4	12.0	19.4	10.7	10.0	10.4	12.0	
Japan		7.7	9.3	9.8	8.2	8.4	8.6	9.4	
Asia/Pacific		51.3	22.9	25.4	13.8	14.1	16.5	21.5	
Rest of World		53.2	1.7	17.7	11.5	12.6	14.6	16.3	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-1
CAD/CAM/CAE/GIS Software History and Forecast
Detail Japan Forecast, All Applications, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	74,777	96,425	101,110	112,900	124,300	136,700	150,700	166,000	10
Seats	80,940	104,182	106,741	117,700	127,900	138,800	152,100	167,100	9
Year-to-Year Increase (%)	2	29	2	10	9	8	10	10	
Installed Base									
CPUs	288,092	346,072	404,373	462,900	516,400	568,800	616,800	654,500	10
Seats	313,405	373,441	431,974	490,000	542,800	594,700	642,500	679,800	9
Year-to-Year Increase (%)	17	19	16	13	11	10	8	6	
REVENUE DATA ($M)									
CPU Revenue	1,652	1,804	1,841	2,016	2,183	2,347	2,517	2,729	8
Terminal Revenue	95	88	65	48	36	21	15	12	-29
Peripheral Revenue	327	256	269	257	241	225	210	198	-6
Hardware Revenue	2,074	2,148	2,175	2,321	2,459	2,594	2,742	2,940	6
Year-to-Year Increase (%)	2	4	1	7	6	5	6	7	
Software Revenue	1,117	1,203	1,316	1,445	1,563	1,694	1,840	2,014	9
Year-to-Year Increase (%)	10	8	9	10	8	8	9	9	
Software Service	232	325	412	457	489	514	544	577	7
Hardware Service	383	432	402	435	452	466	482	505	5
Service Revenue	615	757	814	891	941	980	1,026	1,081	6
Year-to-Year Increase (%)	5	23	8	10	6	4	5	5	
Total Factory Revenue	3,806	4,108	4,304	4,657	4,963	5,268	5,608	6,035	7
Year-to-Year Increase (%)	5	8	5	8	7	6	6	8	

NA = Not applicable

Source: Dataquest (October 1995)

Table B-2
CAD/CAM/CAE/GIS Software History and Forecast
Detail Japan Forecast, Mechanical, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	38,125	53,811	57,488	62,200	67,100	72,300	78,500	84,900	8
Seats	42,779	59,994	61,803	65,800	69,800	73,800	79,400	85,600	7
Year-to-Year Increase (%)	14	40	3	6	6	6	8	8	
Installed Base									
CPUs	137,162	171,863	209,100	245,100	276,300	303,300	323,800	337,800	10
Seats	156,161	192,855	230,380	266,000	296,800	323,100	343,300	356,800	9
Year-to-Year Increase (%)	18	23	19	15	12	9	6	4	
REVENUE DATA ($M)									
CPU Revenue	901	1,006	980	1,028	1,077	1,113	1,152	1,205	4
Terminal Revenue	69	71	53	39	29	16	10	8	-32
Peripheral Revenue	186	155	158	147	137	126	117	108	-7
Hardware Revenue	1,156	1,232	1,192	1,214	1,242	1,255	1,279	1,321	2
Year-to-Year Increase (%)	12	7	-3	2	2	1	2	3	
Software Revenue	604	652	676	713	754	801	854	917	6
Year-to-Year Increase (%)	25	8	4	5	6	6	7	7	
Software Service	109	156	189	199	207	212	221	233	4
Hardware Service	215	239	210	217	217	214	212	212	0
Service Revenue	324	394	400	416	424	426	433	446	2
Year-to-Year Increase (%)	16	22	1	4	2	1	2	3	
Total Factory Revenue	2,083	2,278	2,267	2,343	2,420	2,482	2,565	2,684	3
Year-to-Year Increase (%)	17	9	0	3	3	3	3	5	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-3
CAD/CAM/CAE/GIS Software History and Forecast
Detail Japan Forecast, AEC, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	12,670	18,446	17,114	20,400	23,000	25,800	28,900	31,900	13
Seats	13,419	19,280	17,753	20,900	23,300	26,000	29,000	32,000	13
Year-to-Year Increase (%)	-6	44	-8	18	12	11	12	10	
Installed Base									
CPUs	51,066	62,111	70,528	80,500	89,500	98,500	107,700	114,900	10
Seats	54,112	65,333	73,747	83,600	92,300	101,300	110,500	117,600	10
Year-to-Year Increase (%)	16	21	13	13	10	10	9	6	
REVENUE DATA ($M)									
CPU Revenue	190	227	225	255	276	297	314	334	8
Terminal Revenue	10	6	5	3	2	2	1	1	-31
Peripheral Revenue	46	40	45	43	40	36	34	32	-7
Hardware Revenue	246	273	275	301	317	335	349	367	6
Year-to-Year Increase (%)	-2	11	1	10	5	5	4	5	
Software Revenue	124	145	163	183	194	205	218	232	7
Year-to-Year Increase (%)	5	17	12	13	6	6	6	6	
Software Service	16	34	48	52	53	53	53	53	2
Hardware Service	39	45	45	48	49	49	50	51	3
Service Revenue	55	79	92	100	101	102	103	105	3
Year-to-Year Increase (%)	-7	45	16	8	1	0	1	2	
Total Factory Revenue	424	498	530	585	613	642	670	703	6
Year-to-Year Increase (%)	-1	17	7	10	5	5	4	5	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-4
CAD/CAM/CAE/GIS Software History and Forecast
Detail Japan Forecast, GIS/Mapping, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	4,261	4,536	5,508	7,000	7,900	8,800	9,800	10,800	14
Seats	4,719	5,075	6,041	7,500	8,300	9,100	9,900	10,900	13
Year-to-Year Increase (%)	-9	8	19	24	10	10	10	10	
Installed Base									
CPUs	14,762	17,722	21,129	25,400	29,500	33,800	37,900	41,400	14
Seats	16,195	19,418	23,079	27,500	31,700	36,100	40,200	43,700	14
Year-to-Year Increase (%)	27	20	19	19	15	14	12	9	
REVENUE DATA ($M)									
CPU Revenue	113	119	135	165	178	194	207	221	10
Terminal Revenue	6	5	3	2	2	1	1	0	-31
Peripheral Revenue	32	23	22	24	23	22	21	20	-2
Hardware Revenue	151	147	160	190	202	217	228	241	9
Year-to-Year Increase (%)	13	-3	9	19	6	7	5	6	
Software Revenue	72	81	97	119	128	138	148	158	10
Year-to-Year Increase (%)	35	13	19	23	8	8	7	7	
Software Service	14	19	22	27	29	29	30	30	6
Hardware Service	25	31	31	38	39	41	42	44	7
Service Revenue	39	50	54	65	68	70	72	74	7
Year-to-Year Increase (%)	16	26	8	21	5	4	3	2	
Total Factory Revenue	263	278	311	374	399	425	448	473	9
Year-to-Year Increase (%)	18	6	12	20	6	7	5	5	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-5
CAD/CAM/CAE/GIS Software History and Forecast
Detail Japan Forecast, Electronic Design Automation, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	19,720	19,633	21,000	23,300	26,300	29,700	33,500	38,300	13
Seats	20,023	19,833	21,145	23,500	26,500	29,900	33,700	38,500	13
Year-to-Year Increase (%)	-10	-1	7	11	13	13	13	14	
Installed Base									
CPUs	85,102	94,377	103,615	111,900	121,100	133,200	147,400	160,400	9
Seats	86,937	95,835	104,768	112,900	122,000	134,200	148,500	161,700	9
Year-to-Year Increase (%)	15	10	9	8	8	10	11	9	
REVENUE DATA ($M)									
CPU Revenue	448	451	500	569	652	744	844	969	14
Terminal Revenue	9	6	4	3	3	3	3	3	-4
Peripheral Revenue	64	39	44	43	42	41	39	38	-3
Hardware Revenue	521	496	548	615	698	788	886	1,011	13
Year-to-Year Increase (%)	-17	-5	10	12	13	13	12	14	
Software Revenue	317	324	380	429	487	550	621	708	13
Year-to-Year Increase (%)	-12	2	17	13	13	13	13	14	
Software Service	93	117	153	178	201	220	240	260	11
Hardware Service	104	117	115	132	147	162	178	197	11
Service Revenue	197	234	268	310	348	381	418	457	11
Year-to-Year Increase (%)	-9	19	15	16	12	10	10	9	
Total Factory Revenue	1,036	1,055	1,196	1,354	1,532	1,719	1,925	2,175	13
Year-to-Year Increase (%)	-14	2	13	13	13	12	12	13	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-6
CAD/CAM/CAE/GIS Software History and Forecast
Detail Japan Forecast, Electronic CAE, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	9,958	10,241	11,354	12,900	14,900	17,200	19,800	23,200	15
Seats	10,051	10,261	11,405	12,900	14,900	17,200	19,800	23,200	15
Year-to-Year Increase (%)	-3	2	11	13	16	16	15	17	
Installed Base									
CPUs	41,944	46,685	51,945	57,200	63,200	71,100	80,600	89,900	12
Seats	42,326	46,975	52,194	57,400	63,500	71,400	80,900	90,200	12
Year-to-Year Increase (%)	16	11	11	10	11	12	13	12	
REVENUE DATA ($M)									
CPU Revenue	202	221	253	296	348	407	470	551	17
Terminal Revenue	4	2	2	2	1	1	1	1	-6
Peripheral Revenue	23	18	21	21	22	22	22	22	1
Hardware Revenue	229	241	276	319	371	431	493	574	16
Year-to-Year Increase (%)	-7	5	14	16	16	16	15	16	
Software Revenue	144	153	190	218	253	293	336	391	16
Year-to-Year Increase (%)	-5	7	24	15	16	16	15	16	
Software Service	47	56	73	87	100	112	123	134	13
Hardware Service	46	57	58	68	78	88	98	111	14
Service Revenue	93	113	131	155	178	200	221	245	13
Year-to-Year Increase (%)	2	21	16	18	14	12	11	11	
Total Factory Revenue	466	508	597	693	802	923	1,051	1,210	15
Year-to-Year Increase (%)	-5	9	18	16	16	15	14	15	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-7
CAD/CAM/CAE/GIS Software History and Forecast
Detail Japan Forecast, IC Layout, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	2,091	2,070	2,299	2,600	3,100	3,600	4,400	5,200	18
Seats	2,130	2,055	2,251	2,600	3,100	3,600	4,400	5,200	18
Year-to-Year Increase (%)	-27	-3	10	16	19	18	20	20	
Installed Base									
CPUs	11,003	11,845	12,741	13,700	14,900	16,700	19,000	21,600	11
Seats	11,167	11,935	12,743	13,700	14,900	16,700	18,900	21,500	11
Year-to-Year Increase (%)	10	7	7	7	9	12	14	14	
REVENUE DATA ($M)									
CPU Revenue	97	81	95	107	127	149	178	213	18
Terminal Revenue	1	1	-	-	-	-	-	-	NA
Peripheral Revenue	6	2	1	1	2	2	2	2	2
Hardware Revenue	105	84	97	108	128	150	179	215	17
Year-to-Year Increase (%)	-23	-20	15	12	19	17	19	20	
Software Revenue	62	49	61	72	85	100	119	143	19
Year-to-Year Increase (%)	-23	-21	23	18	19	17	20	20	
Software Service	22	28	38	45	53	59	67	75	15
Hardware Service	24	21	22	25	29	33	38	44	14
Service Revenue	46	49	60	71	82	92	105	119	15
Year-to-Year Increase (%)	-26	9	22	17	16	12	14	13	
Total Factory Revenue	213	183	218	250	295	341	403	476	17
Year-to-Year Increase (%)	-24	-14	19	15	18	16	18	18	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-8
CAD/CAM/CAE/GIS Software History and Forecast
Detail Japan Forecast, PCB/MCM/Hybrid, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	7,671	7,322	7,346	7,800	8,400	8,900	9,400	9,800	6
Seats	7,842	7,517	7,490	8,000	8,500	9,100	9,500	10,000	6
Year-to-Year Increase (%)	-13	-4	0	6	7	6	5	5	
Installed Base									
CPUs	32,156	35,847	38,930	41,100	42,900	45,400	47,800	48,900	5
Seats	33,444	36,924	39,832	41,900	43,700	46,200	48,700	49,900	5
Year-to-Year Increase (%)	16	10	8	5	4	6	5	3	
REVENUE DATA ($M)									
CPU Revenue	149	149	152	165	177	188	196	205	6
Terminal Revenue	4	3	2	2	2	2	2	2	-2
Peripheral Revenue	35	19	21	20	19	17	16	14	-8
Hardware Revenue	187	171	175	187	198	207	214	221	5
Year-to-Year Increase (%)	-23	-9	3	7	6	5	3	4	
Software Revenue	111	122	130	139	149	158	166	174	6
Year-to-Year Increase (%)	-13	10	6	8	7	6	5	5	
Software Service	24	32	42	46	48	49	50	51	4
Hardware Service	34	39	35	38	40	41	42	42	4
Service Revenue	58	71	77	84	88	90	92	93	4
Year-to-Year Increase (%)	-10	23	7	10	5	2	2	1	
Total Factory Revenue	357	364	381	411	435	455	471	488	5
Year-to-Year Increase (%)	-18	2	5	8	6	5	4	4	

NA = Not applicable

Source: Dataquest (October 1995)

Table B-9
CAD/CAM/CAE/GIS Software History and Forecast
Detail Japan Forecast, All Applications, UNIX

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	34,190	45,047	52,570	56,400	60,700	64,300	68,000	71,900	6
Seats	34,190	45,047	52,570	56,400	60,700	64,300	68,000	71,900	6
Year-to-Year Increase (%)	4	32	17	7	8	6	6	6	
Installed Base									
CPUs	123,186	158,876	199,140	237,000	272,700	306,700	335,400	353,700	12
Seats	123,186	158,876	199,140	237,000	272,700	306,700	335,400	353,700	12
Year-to-Year Increase (%)	29	29	25	19	15	12	9	5	
REVENUE DATA ($M)									
CPU Revenue	1,078	1,338	1,487	1,635	1,752	1,848	1,947	2,054	7
Terminal Revenue	-	-	-	-	-	-	-	-	NA
Peripheral Revenue	251	209	230	214	191	168	147	129	-11
Hardware Revenue	1,329	1,546	1,718	1,849	1,943	2,017	2,095	2,183	5
Year-to-Year Increase (%)	8	16	11	8	5	4	4	4	
Software Revenue	760	916	1,038	1,134	1,213	1,278	1,344	1,415	6
Year-to-Year Increase (%)	14	20	13	9	7	5	5	5	
Software Service	191	267	359	402	426	433	440	441	4
Hardware Service	270	361	350	389	403	411	418	426	4
Service Revenue	461	629	708	791	829	844	858	866	4
Year-to-Year Increase (%)	14	36	13	12	5	2	2	1	
Total Factory Revenue	2,551	3,091	3,463	3,774	3,985	4,140	4,297	4,463	5
Year-to-Year Increase (%)	11	21	12	9	6	4	4	4	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-10
CAD/CAM/CAE/GIS Software History and Forecast
Detail Japan Forecast, All Applications, NT/Hybrid

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	-	-	360	1,200	2,100	4,000	6,100	9,300	92
Seats	-	-	360	1,200	2,100	4,000	6,100	9,300	92
Year-to-Year Increase (%)	NA	NA	NA	242	75	84	55	51	
Installed Base									
CPUs	-	-	360	1,600	3,700	7,000	11,300	17,700	118
Seats	-	-	360	1,600	3,700	7,000	11,300	17,700	118
Year-to-Year Increase (%)	NA	NA	NA	342	135	88	60	57	
REVENUE DATA ($M)									
CPU Revenue	-	-	5	21	37	75	121	202	109
Terminal Revenue	-	-	-	-	-	-	-	-	NA
Peripheral Revenue	-	-	1	3	3	5	7	10	71
Hardware Revenue	-	-	6	24	40	80	128	211	106
Year-to-Year Increase (%)	NA	NA	NA	325	66	100	61	64	
Software Revenue	-	0	7	23	48	98	154	232	103
Year-to-Year Increase (%)	NA	NA	5,167	237	109	105	58	50	
Software Service	-	0	2	6	15	32	53	82	112
Hardware Service	-	-	2	5	8	14	22	35	70
Service Revenue	-	0	4	11	22	46	75	117	93
Year-to-Year Increase (%)	NA	NA	34,954	156	99	108	62	56	
Total Factory Revenue	-	0	17	58	110	224	357	560	102
Year-to-Year Increase (%)	NA	NA	11,804	246	89	104	60	57	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-11
CAD/CAM/CAE/GIS Software History and Forecast
Detail Japan Forecast, All Applications, Personal Computer

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	36,922	49,409	46,746	54,100	60,600	67,800	76,200	84,500	13
Seats	36,923	49,410	46,746	54,100	60,600	67,800	76,200	84,500	13
Year-to-Year Increase (%)	-1	34	-5	16	12	12	12	11	
Installed Base									
CPUs	149,265	172,102	191,556	213,500	231,200	247,800	263,400	276,800	8
Seats	149,265	172,102	191,556	213,500	231,200	247,800	263,400	276,800	8
Year-to-Year Increase (%)	12	15	11	11	8	7	6	5	
REVENUE DATA ($M)									
CPU Revenue	203	263	242	281	337	390	425	457	14
Terminal Revenue	-	-	-	-	-	-	-	-	NA
Peripheral Revenue	37	26	32	37	45	51	56	60	13
Hardware Revenue	241	289	274	318	382	442	481	517	13
Year-to-Year Increase (%)	-9	20	-5	16	20	16	9	7	
Software Revenue	248	211	230	255	279	305	334	362	10
Year-to-Year Increase (%)	12	-15	9	11	9	9	10	8	
Software Service	17	33	29	32	37	41	46	51	12
Hardware Service	19	21	25	23	29	34	37	41	11
Service Revenue	36	54	54	56	65	75	83	91	11
Year-to-Year Increase (%)	-8	50	0	4	17	14	11	10	
Total Factory Revenue	525	553	558	629	726	821	898	970	12
Year-to-Year Increase (%)	0	5	1	13	15	13	9	8	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-12
CAD/CAM/CAE/GIS Software History and Forecast
Detail Japan Forecast, All Applications, Host/Proprietary

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	3,665	1,969	1,435	1,200	900	500	400	300	-27
Seats	9,827	9,725	7,066	5,900	4,500	2,700	1,800	1,400	-28
Year-to-Year Increase (%)	9	-1	-27	-16	-25	-40	-32	-24	
Installed Base									
CPUs	15,641	15,094	13,316	10,900	8,700	7,300	6,700	6,400	-14
Seats	40,954	42,463	40,918	38,000	35,200	33,300	32,500	31,700	-5
Year-to-Year Increase (%)	6	4	-4	-7	-7	-5	-2	-3	
REVENUE DATA ($M)									
CPU Revenue	371	203	106	79	57	34	23	17	-31
Terminal Revenue	95	88	65	48	36	21	15	12	-29
Peripheral Revenue	39	22	6	3	1	1	0	0	-55
Hardware Revenue	504	313	177	130	94	56	38	29	-30
Year-to-Year Increase (%)	-6	-38	-43	-27	-27	-41	-32	-23	
Software Revenue	109	76	42	33	23	13	8	5	-34
Year-to-Year Increase (%)	-15	-30	-46	-21	-30	-43	-39	-34	
Software Service	23	25	22	16	12	7	5	4	-31
Hardware Service	95	49	25	18	12	7	5	3	-33
Service Revenue	118	74	47	33	24	15	10	7	-32
Year-to-Year Increase (%)	-18	-37	-36	-30	-27	-40	-34	-27	
Total Factory Revenue	731	464	266	196	142	84	56	42	-31
Year-to-Year Increase (%)	-10	-37	-43	-26	-28	-41	-33	-25	

NA = Not applicable
Source: Dataquest (October 1995)

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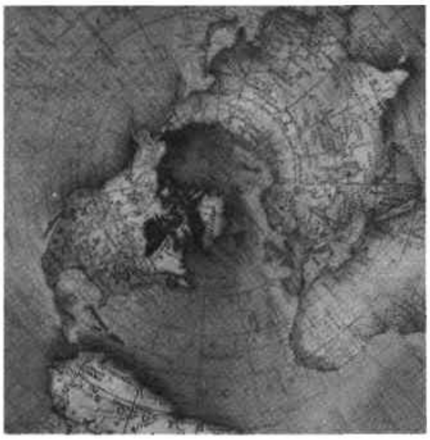

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CAD/CAM/CAE and GIS Asia/Pacific Forecast Update

Market Statistics

Program: CAD/CAM/CAE/GIS Asia/Pacific
Product Code: CCAM-AP-MS-9503
Publication Date: December 4, 1995
Filing: Market Analysis

CAD/CAM/CAE and GIS Asia/Pacific Forecast Update

Market Statistics

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Note: All tables show estimated data.

Chapter 1
CAD/CAM/CAE and GIS Asia/Pacific Forecast Update

Fluctuating exchange rates once again masked the true market performance in the 1994 CAD/CAM/CAE and GIS market. Japanese CAD/CAM/CAE and GIS total factory revenue grew 4.8 percent from 1993 to 1994 when measured in U.S. dollars, contrary to what would be expected given the country's prolonged recession. However, the dollar depreciated against the yen at a rate of 8.2 percent so that when measured in yen, Japanese CAD/CAM/CAE and GIS total factory revenue declined 3.8 percent from 1993 to 1994.

Less dramatically, European CAD/CAM/CAE and GIS total factory revenue grew 9.9 percent from 1993 to 1994 when measured in U.S. dollars. With the dollar depreciating 1.5 percent, European CAD/CAM/CAE and GIS total factory revenue grew a lower 8.2 percent from 1993 to 1994 when measured in ECU. Table 1 shows the impact of currency fluctuation on the CAD/CAM/CAE and GIS software market.

Looking ahead, currency fluctuations will continue to be felt in all global markets. The dollar has continued to weaken during the early months of this year so that if we were to assume a stable currency for the remainder of the year, 1995 would end with the dollar depreciating 4.2 percent against the yen and 7.8 percent against the ECU (see Table 2). Although Dataquest does not forecast currency exchange rates, we do forecast with the best information available. The exchange rate is calculated as the simple arithmetic mean of the 12 average monthly rates for each country. For the purpose of this forecast, Dataquest assumes the September exchange rate will remain stable in the future.

This document contains Dataquest's detailed forecast information for the CAD/CAM/CAE and GIS industry. Included are the following:

- Five-year historical data
- Five-year forecast data

More detailed data is available through Dataquest's Client Inquiry service, which can provide custom analysis of the multidimensional database.

Changes to Our Forecast Structure

Dataquest's CAD/CAM/CAE and GIS forecast is based upon the updated market share data gathered before the end of 1994 and updated throughout 1995. In order to better serve you, the new CAD/CAM/CAE and GIS database has been restructured as follows:

- Japan is now tracked as a region separate from Asia/Pacific.
- Asia/Pacific now includes China, Hong Kong, Korea, Singapore, Taiwan, and Rest of Asia (Australia, New Zealand, India, and Southeast Asia).

Table 1
CAD/CAM/CAE and GIS Revenue Growth Comparison
(U.S. Dollars versus Local Currency for Both Europe and Japan)

Revenue by Region	1993	1994	Forecast 1999	Growth (%) 1993-1994	CAGR (%) 1994-1999
Europe ($M)					
Software Revenue	1,628.29	1,824.12	3,276.03	12.0	12.4
Hardware Revenue	2,421.88	2,604.55	5,022.05	7.5	14.0
Service Revenue	996.57	1,115.23	1,976.19	11.9	12.1
Total Factory Revenue	5,046.74	5,543.91	10,274.27	9.9	13.1
ECU/U.S.$ Exchange Rate*	0.86	0.84	0.77	-1.5	-1.8
Europe (ECU Millions)					
Software Revenue	1,394.80	1,538.83	2,522.54	10.3	10.4
Hardware Revenue	2,074.58	2,197.20	3,866.98	5.9	12.0
Service Revenue	853.67	940.81	1,521.67	10.2	10.1
Total Factory Revenue	4,323.04	4,676.84	7,911.19	8.2	11.1
Japan ($M)					
Software Revenue	1,203.33	1,315.70	2,013.89	9.3	8.9
Hardware Revenue	2,148.02	2,174.59	2,893.95	1.2	5.9
Service Revenue	756.90	813.74	1,074.17	7.5	5.7
Total Factory Revenue	4,108.24	4,304.03	5,982.01	4.8	6.8
Japan/U.S.$ Exchange Rate*	110.85	101.81	99.73	-8.2	-0.4
Japan (Yen Millions)					
Software Revenue	133,388.69	133,951.14	200,845.20	0.4	8.4
Hardware Revenue	238,107.55	221,394.71	288,613.32	-7.0	5.4
Service Revenue	83,902.25	82,847.36	107,126.86	-1.3	5.3
Total Factory Revenue	455,398.49	438,193.21	596,585.38	-3.8	6.4
North America ($M)					
Software Revenue	1,758.41	1,929.06	3,711.42	9.7	14.0
Hardware Revenue	2,345.76	2,512.99	4,526.12	7.1	12.5
Service Revenue	1,036.93	1,176.56	1,916.85	13.5	10.3
Total Factory Revenue	5,141.36	5,618.72	10,154.40	9.3	12.6
Worldwide ($M)					
Software Revenue	4,890.91	5,418.96	9,776.21	10.8	12.5
Hardware Revenue	7,351.48	7,798.97	13,510.08	6.1	11.6
Service Revenue	2,968.24	3,313.93	5,319.26	11.6	9.9
Total Factory Revenue	15,210.89	16,531.96	28,605.55	8.7	11.6

*Assuming a stable currency, the 1999 exchange rate is the September 1995 exchange rate.
Source: Dataquest (October 1995)

Table 2
Foreign Currency versus the U.S. Dollar

		Actual				Current			Year-to-Year Change (%)					
Country	Currency	1990	1991	1992	1993	1994	1995	1996	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996
Austria	Schilling	11.36	11.67	10.95	11.65	11.40	10.32	10.05	2.73	-6.2	6.4	-2.1	-9.5	-2.6
Belgium	Franc	33.41	34.13	32.02	34.67	33.66	30.16	29.38	2.16	-6.2	8.3	-2.9	-10.4	-2.6
Denmark	Krone	6.18	6.39	6.02	6.49	6.35	5.70	5.54	3.40	-5.8	7.8	-2.2	-10.2	-2.8
Finland	Markka	3.82	4.04	4.45	5.73	5.21	4.39	4.27	5.76	10.1	28.8	-9.1	-15.7	-2.7
France	Franc	5.44	5.64	5.27	5.67	5.54	5.04	4.92	3.68	-6.6	7.6	-2.3	-9.0	-2.4
Germany	D-Mark	1.62	1.66	1.56	1.66	1.62	1.45	1.43	2.47	-6.0	6.4	-2.4	-10.8	-1.0
Italy	Lira	1,197.22	1,238.93	1,227.75	1,577.85	1,609.34	1,625.01	1,616.00	3.48	-0.9	28.5	2.0	1.0	-0.6
Netherlands	Guilder	1.82	1.87	1.75	1.86	1.82	1.64	1.64	2.75	-6.4	6.3	-2.2	-9.9	0.2
Norway	Krone	6.25	6.49	6.18	7.11	7.04	6.42	6.25	3.84	-4.8	15.0	-1.0	-8.8	-2.6
Spain	Peseta	102.03	103.81	101.90	127.87	133.48	125.35	123.48	1.74	-1.8	25.5	4.4	-6.1	-1.5
Sweden	Krona	5.92	6.04	5.81	7.82	7.70	7.30	6.95	2.03	-3.8	34.6	-1.5	-5.2	-4.8
Switzerland	Franc	1.39	1.43	1.40	1.48	1.37	1.20	1.16	2.88	-2.1	5.7	-7.4	-12.7	-3.0
United Kingdom	Pound	0.56	0.57	0.57	0.67	0.65	0.64	0.63	1.79	0	17.5	-3.0	-1.5	-1.6
Europe Average	ECU	0.79	0.81	0.77	0.86	0.84	0.78	0.77	2.27	-4.9	11.4	-1.5	-7.8	-1.0
China	Renminbi	4.79	5.33	5.51	5.76	8.54	8.32	8.32	11.27	3.4	4.5	48.3	-2.6	0
Hong Kong	Dollar	7.79	7.77	7.74	7.74	7.73	7.74	7.73	-0.26	-0.4	0	-0.1	0.1	-0.1
Japan	Yen	144.05	134.59	126.34	110.85	101.56	97.34	99.73	-6.57	-6.1	-12.3	-8.4	-4.2	2.5
Korea	Won	242.70	730.67	782.41	799.42	805.80	773.20	768.20	201.06	7.1	2.2	0.8	-4.0	-0.6
Singapore	Dollar	1.81	1.73	1.63	1.62	1.53	1.42	1.42	-4.42	-5.8	-0.9	-5.3	-7.2	0
Taiwan	Dollar	26.64	26.49	24.93	26.15	26.45	27.50	27.06	-0.56	-5.9	4.9	1.1	4.0	-1.6

Source: Dataquest (October 1995)

- Service is divided into hardware service and software service.
- Platforms have been replaced by operating systems, to include UNIX, host, Windows NT and PC.

This restructuring is reflected in the forecast. The net result is a better history from which to forecast. Unfortunately, because of this restructuring, the data will not match the data in Dataquest's previously published market share documents. In addition to some shifting of revenue to allow for the restructuring, several company changes were made as follows:

- Work in the new database resulted in the loss of some companies' European and Asian revenue, most notably Altera. The revenue for these companies has been corrected and is available through your inquiry privilege.
- UniCAD had inadvertently been excluded from our market share database and was therefore not included in previously published market share documents. It has been added.
- Mentor Graphics restated its revenue for 1992 and 1993, correcting an error in its reporting by shifting revenue from the year of order to the year of sale and realigning its sales to our changed subapplication definitions.

Worldwide Forecast Assumptions

The following paragraphs describe the main forces driving the CAD/CAM/CAE and GIS worldwide software forecast.

Mechanical Forecast Assumptions

The mechanical CAD/CAM/CAE market, which grew 9.7 percent in 1994, is expected to reach a market size of $3.9 million in five years. The market will be fueled by a complex and rich blend of emerging technologies, regional growth, and new applications for CAD technology.

Emerging Technologies

Topping the list of emerging technologies is product data management. This market has clearly begun to take off, not only in Europe and the United States but in Japan and Korea as well. Within the past year, we have seen pilot programs begin to move to full-scale production, support for new client platforms (Windows NT, Windows), integration with materials resource planning (MRP) systems, and an emergence of a "lite" product data management (PDM) category. PDM will be one of the significant drivers of the mechanical CAD market through 1999. Farther down the road, we expect growth in the industry to come from other emerging technologies, including generative numerical control (NC) software, analysis, conceptual design, and simulation/optimization software.

Regional Growth

The outlook for the European markets is brighter than it has been for the last few years. The European economy as a whole continues to emerge slowly from its recession, and many of the European industries have begun a major restructuring of their information technology (IT) investment. Tool purchases by automotive companies and their supplier bases will lead to higher growth for both software and hardware revenue in the mechanical CAD/CAM/CAE sector in Europe.

Mechanical CAD/CAM/CAE growth in Japan is expected to undergo a significant shift in platform usage over our forecast period. Currently, the UNIX platform dominates the mechanical sector in Japan, despite the fact the Japanese mechanical market still places a heavy emphasis on 2-D drafting instead of 3-D/solid modeling. We expect this drafting orientation to persist, and in the next five years we anticipate a significant shift to more Windows NT and PC-based operating systems, at the expense of UNIX. This shift will not begin in earnest until late 1996, when Japan-specific versions of mechanical software on Windows NT are more widely available.

New Applications for CAD Technology

In 1994, we saw the beginning of new applications for mechanical CAD technology. Growth is picking up in nontraditional industries (those industries outside of aerospace and automotive). We expect this trend to continue as mechanical modeling, analysis, design, and simulation software become more user-friendly. Closely linked to the use of mechanical CAD in new arenas is the availability of such software on lower-cost platforms like Windows NT and the use of object technology to create customized industry- or application-specific solutions.

AEC Forecast Assumptions

The Impact of Windows NT

Intergraph dominates the UNIX market in North America, and the company's shift to Windows NT will cause both the collapse of UNIX sales in North America and the gradual erosion of UNIX in Europe. Windows NT will get a boost in 1995, driven by frustrated PC users who demand high performance and who cannot wait for Windows 95 to solve their requirements.

Factors that should contribute to the long-term expansion of the AEC CAD market are as follows:

CAD Is Becoming a Business Requirement

Large design firms are growing at the expense of smaller firms. These large end users increasingly require their employees and suppliers to adopt automation tools in the design and construction process. Smaller design firms must increasingly buy CAD systems or risk being dropped from consideration as a partner.

CAD purchases are increasingly justified as a competitive advantage in both sales and design reviews. Electronic design data is also required downstream by the designer's client, from the federal government down to the small commercial developer. Also, a significant pool of untapped users still exists. The current relatively low market penetration of AEC CAD systems should allow steady worldwide growth during the next five years, despite constant volatility in demand for the buildings and infrastructure to be designed.

New Features in AEC CAD Products Are Achievable

Better, lower-cost visualization tools will be in increasing demand as sales and communication tools. Data and database functions (versus graphics functions) are increasing in importance in AEC design systems, creating opportunities to sell users significant new functionality. Some vendors will create products that foster communication in the entire design, construction, and maintenance process, products that will increase the payoff in CAD investments.

The following trends will inhibit growth in the AEC CAD industry:

Design Is Only Part of the Problem

AEC's one-design-one-build structure means CAD provides fewer economic benefits to these users than does the one-design-build-many structure of manufacturing. Construction, which is essentially a prototype build, is fraught with uncertainties and delays that are not well addressed by existing AEC systems. Design tools can only thrive in the AEC structure when they support more of the entire business problem.

Poor Cooperation among Users

Users are poorly organized to take advantage of improved products, partly because of competition between engineering constructors and partly because designs are often split among several different companies representing different and competing aspects of the design process. New approaches to the design and construction process are needed to allow users to take full advantage of CAD tools.

GIS/Mapping Forecast Assumptions

The Impact of Windows NT

Intergraph's move to Windows NT at the expense of UNIX will quickly make PC-based operating systems the dominant revenue stream in North America. In the long term, the GIS UNIX market is highly subject to erosion by Windows NT because of the appeal of better integration of GIS and Windows-based productivity tools.

Factors that should contribute to the long-term expansion of the GIS market are as follows:

There Exists an Abundant Supply of Prospective Buyers

Penetration is still moderately low among core users. Bread-and-butter prospects in government and utilities are charged with maintaining information on land and assets in perpetuity. Many of these prospective buyers are still using paper maps that will degrade over time. This creates a certain inevitability to moving from paper maps to computer-based systems.

New Technologies Will Drive Growth

Faster, cheaper computers will be continually leveraged to support new software products. Widespread computer-industry developments in open, distributed systems supporting high-speed networking will make it possible for GIS technology to broadly expand its user base. Lower-cost, higher-resolution satellite imagery holds the potential to drive another explosion in GIS market growth among users who cannot afford aerial photography. Advances in aerial photography, global positioning systems (GPSs), and laser range finders are making it possible to create GISs significantly cheaper, more accurate, and more complete than existing paper maps, giving experienced users some compelling reasons to reinvest. Portable and pen-based computers are bringing GIS to new users in field operations.

Data Will Drive Growth

The GIS business market is driving high growth on PCs. However, we see a wide band of uncertainty surrounding the clearly growing revenue opportunity from new applications. Several new applications in GIS are destined to become relatively low-revenue producing features in other software programs (and market), rather than standalone products in the GIS market. At the same time, data is increasing in value relative to software in this low-end market.

GIS has attained a certain indispensability, particularly among federal users and in utilities. As a result, users are beginning to expect to share the data in their various GIS systems. Within three years, we expect data to be readily exchangeable across different systems. At that point, shareable data will help drive market growth.

Several factors seriously constrain the long-term expansion of the GIS market, as follows:

High Cost of Entry Remains a Barrier

There will remain an uncertain, but certainly high, cost of creating a working GIS system in traditional environments. No magic will emerge to create a low-cost, meaningful data set for mainstream customers in government and utilities. Data conversion will remain costly because the significant cost of correcting prior errors and omissions on paper maps is inevitably bundled into the cost of "conversion."

Price Pressures Inhibit Growth

Price pressure will hold down total revenue. Innovation is the only way to maintain prices in any software industry, and GIS vendors will struggle in their attempt to create compelling new applications and improved investment payoff for customers.

Electronic Design Automation

The EDA software market grew 16.8 percent in 1994. Over the next five years, growth will continue to be fueled by continually increasing design complexity and ever-higher speeds.

Electronic CAE

The demands today's tools place on CPU processing speed and memory size are reversing the process of equalization and driving the sales of UNIX-class tools. Equalization (PC-based tools becoming more expensive as UNIX-based tools fall in price) was either caused by the stagnation of the design challenge or, more likely, the stagnation in tool development. Design complexity is forcing a large-scale swap: gate-level users are swapping up to registered transfer (RT)-level while RT-level users are swapping up to electronic system (ES)-level tools. RT-level tools will begin to appear on Windows NT, competing with the UNIX-based tools while the ES-level tools will remain UNIX-based. Meanwhile, low-end design—still manageable by PC-based tools—is shifting to Asia/Pacific and driving PC growth in that region. The main inhibitor to growth in CAE tools is the engineering learning curve.

IC Layout

The IC-layout market grew as expected, 20 percent from 1993 to 1994, after several very sleepy years. Design complexity and high speed is forcing replacement of obsolete tools, driving this high growth. This is primarily a replacement market of very high-cost tools and very few players. The ensuing frenzy for market share is the result. The few PC-based tools in this market are being replaced by UNIX-class tools in North America and Japan. Growth in the very few PC-based tools is in Europe (including eastern Europe) and Asia/Pacific. It is yet unclear whether Windows NT will be able to penetrate the IC Layout market.

PCB/MCM/Hybrid

The 3.3 percent growth in the printed circuit board (PCB) market comes as a surprise, given the forecast negative 2 percent growth from 1993 to 1994. The strong yen masked a decline in PCB growth (in yen) in Japan, where half of PCB sales are.

Organizational manufacturing models are driving changes in the PCB market. As manufacturing organizations are moving to Asia/Pacific (from both North America and Japan), the low-speed designing is following, driving PC sales in that region. In North America, Europe, and Japan, high-speed board design is moving from manufacturing into engineering departments that are traditionally UNIX-based. Where new engineering environments are being created for RT-level designs, the opportunity for Windows NT to take over both the CAE environment and the PCB environment exists.

Forecast Methodology

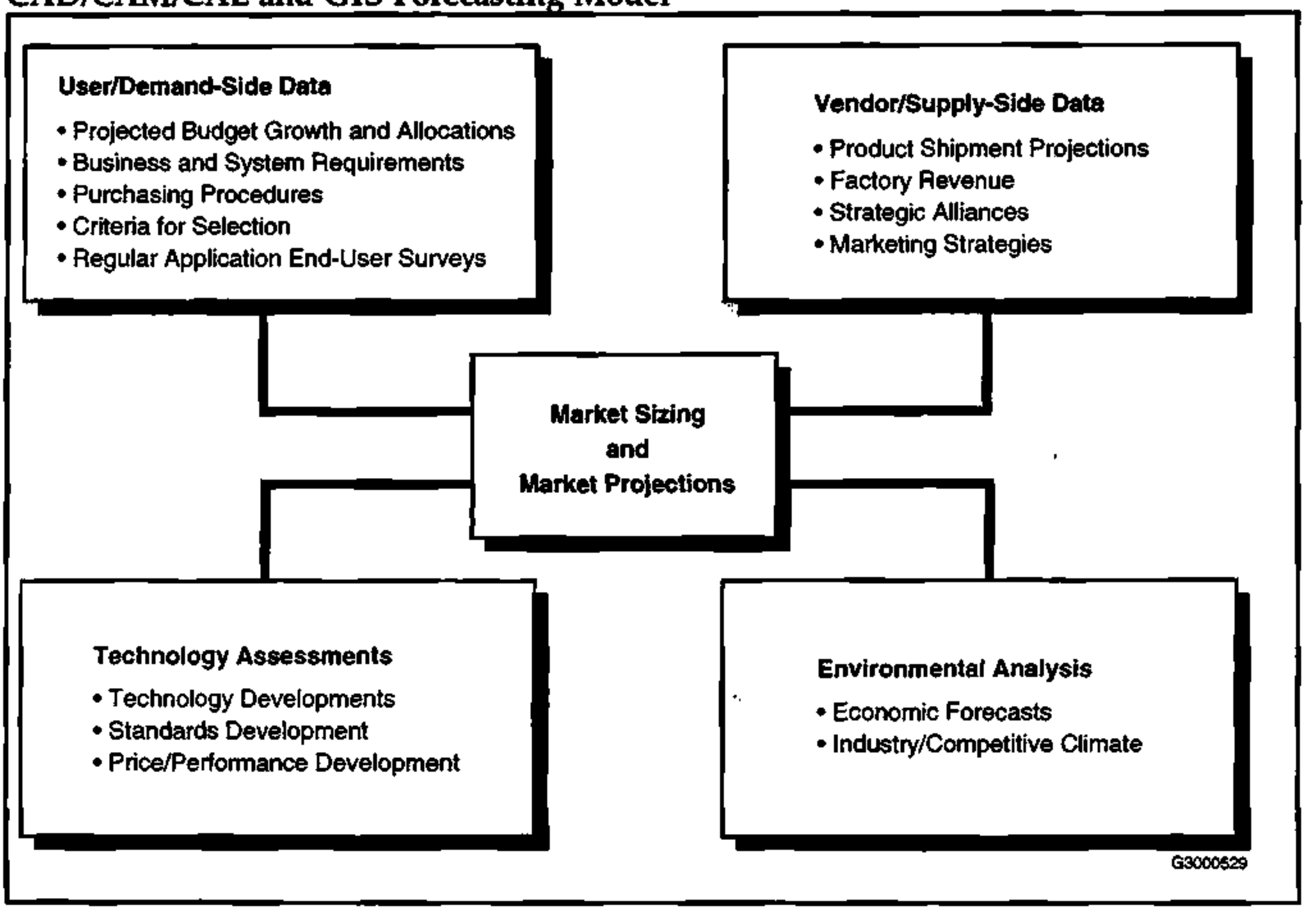
Fundamental to the way Dataquest conducts its research is the underlying philosophy that the best data and analyses come from a well-balanced program. This program includes the following: balance between primary and secondary collection techniques; balance between supply-side and demand-side analysis; balance between focused, industry-specific research and coordinated, "big-picture" analysis aided by integration of data from the more than 25 separate high-technology industries Dataquest covers; and balance between the perspectives of experienced industry professionals and rigorous, disciplined techniques of seasoned market researchers.

Dataquest also analyzes trends in the macro environment, which can have major influences on both supply-side and demand-side forecasting. In addition to demographics, analysts look at gross national product (GNP) growth, interest rate fluctuation, business expectations, and capital spending plans. In the geopolitical arena, the group looks at trade issues, political stability or lack thereof, tariffs, nontariff barriers, and such factors as the effect on Europe of the events of 1994.

Figure 1 shows the CAD/CAM/CAE and GIS forecasting model. The overall forecasting process uses a combination of techniques such as time series and technological modeling. Market estimates and forecasts are derived using the following research techniques:

- Segment forecasting—Individual forecasts are derived for each application segment tracked by the CAD/CAM/CAE and GIS group. Specifically, each application, segmented by region and platform, is forecast and rolled up. In this way, each application segment incorporates its own set of unique assumptions.

Figure 1
CAD/CAM/CAE and GIS Forecasting Model



Source: Dataquest (May 1995)

- Demand-based analysis—Market growth is tracked and forecast in terms of the present and anticipated demand of current and future users. This requires the development of a total available market model and a satisfied available market figure to assess the levels of penetration accurately. Dataquest analysts also factor in the acceptance or ability for users to consume new technology.
- Capacity-based analysis—This method involves identifying future shipment volume constraints. These constraints, or "ceilings," can be the result of component availability, manufacturing capacity, or distribution capacity. In any case, capacity limitations are capable of keeping shipments below the demand level.

Segmentation Definitions

This section lists the definitions specific to this document. The following paragraphs define the segments.

Applications

- Mechanical—The mechanical segment refers to computer-aided tools used by engineers, designers, analysts, technicians, and draftspeople working predominantly in the discrete manufacturing industries, but includes government and education. Users of mechanical CAD/CAM/CAE tools work in all departments across the typical organization, with a majority found in product design, advanced engineering, and manufacturing engineering. Common design applications include conceptual design, industrial design, structural or thermal analysis, detail design, and electromechanical design (the mechanical part of design with electrical or electronic components and mechanisms). Common manufacturing applications include tool and fixture design, numerical control part programming, offline robotics programming, and interface to quality-control systems. Management tools for database control and distribution are included in this segment, as well as user-defined application programming.
- Architecture, Engineering, and Construction (AEC)—The AEC segment covers the use of computer-aided tools by architects, contractors, plant engineers, civil engineers, and other people associated with these disciplines to aid in designing and managing buildings, industrial plants, ships, and other types of nondiscrete entities.
- Geographic Information Systems (GIS)/Mapping—GIS is computer-based technology, and the segment is composed of hardware, software, and data used to capture, edit, display, and analyze spatial (tagged by location) information.
- Electronic Design Automation (EDA)—The EDA segment covers computer-based tools used to automate the process of designing an electronic product, including printed circuit boards, ICs, and systems. EDA includes ECAE, IC layout, and PCB/hybrid/MCM, as follows:
  - Electronic computer-aided engineering (ECAE)—These are computer-aided tools used in the engineering or design phase of electronic products (as opposed to the physical layout phase of the

product). Examples of ECAE applications are schematic capture and simulation.

- IC layout—This is a software application tool used to create and validate the physical implementation of an IC. The IC layout category comprises polygon editors, symbolic editors, placement and routing (gate array, cell, and block), design verification tools (DRC/ERC/logic-to-layout), compilers, and module development tools.
- PCB/hybrid/MCM—This segment covers products used to create the placement and routing of the traces and components laid out on a printed circuit board. Also included in this category are thermal analysis tools.

Regions

The following bullets define the regions.

- North America—North America includes United States, Mexico, and Canada.
- Europe—Europe includes the United Kingdom, Scandinavia, Benelux, France, Germany, Italy, Spain, Austria/Switzerland, Russia, central Europe, and the rest of Europe.
- Japan
- Asia—Asia includes Singapore, Taiwan, Korea, China, Hong Kong, and the rest of Asia (Australia, India, and Southeast Asia).
- Rest of World—Rest of World includes all other countries and regions, including Africa, the Middle East, Central America, and South America.

Operating Systems

The following paragraphs define the operating systems.

UNIX. UNIX includes all UNIX variants and older workstation operating systems.

Host. Host includes minicomputer and mainframe operating systems in which external workstations' functions are dependent on a host computer.

Windows NT. Windows NT is the Microsoft operating system.

PC. PC includes DOS, Windows, Windows 95, OS/2, and Apple operating systems.

Line Items

Line item definitions are as follows:

- Average selling price (ASP) is defined as the average price of a product, inclusive of any discounts.
- CPU revenue is the portion of revenue derived from a system sale that is related to the value of the CPU.

- CPU shipment is defined as the number of CPUs delivered.
- CPU installed base is defined as the total number of CPUs in active, day-to-day use.
- Unit shipment is defined as the number of products delivered (that is, seats).
- Seats are defined as the number of possible simultaneous users.
- Installed seats are defined as the total number of seats in active, day-to-day use.
- Hardware revenue is defined as the sum of the revenue from the hardware system components: CPU revenue, terminal revenue, and peripherals revenue.
- Peripherals revenue is defined as the value of all the peripherals from turnkey sale. (Peripherals in this category typically are input and output devices.)
- Terminal revenue is defined as revenue derived from the sale of terminals used to graphically create, analyze, or manipulate designs. The term is applicable only to the host systems.
- Software revenue is revenue derived from the sale of application software.
- Service revenue is defined as revenue derived from the service and support of CAD/CAM/CAE or GIS systems. Service is followed as software service and hardware service.
- Total factory revenue is defined as the amount of money received for goods measured in U.S. dollars and is the sum of hardware, software, and service revenue.

Table A-1
CAD/CAM/CAE/GIS Software History and Forecast
Top Level Worldwide Forecast, All Applications, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
Software Revenue ($M)									
Worldwide, All Operating Systems	4,583	4,891	5,419	6,224	6,942	7,763	8,691	9,776	12.5
Worldwide									
UNIX	3,163	3,401	3,796	4,249	4,630	5,007	5,439	5,913	9.3
Windows NT	-	5	106	356	568	872	1,201	1,621	72.4
Personal Computer	1,066	1,190	1,327	1,484	1,652	1,827	2,012	2,214	10.8
Host/Proprietary	354	295	190	136	92	58	39	27	-32.1
All Operating Systems									
North America	1,599	1,759	1,929	2,170	2,480	2,863	3,279	3,711	14.0
Europe	1,668	1,628	1,824	2,178	2,410	2,650	2,926	3,276	12.4
Japan	1,117	1,203	1,316	1,445	1,563	1,694	1,840	2,014	8.9
Asia/Pacific	137	207	255	320	364	415	484	587	18.2
Rest of World	61	94	95	112	125	141	161	187	14.5
Year-to-Year Software Revenue Growth Rate (%)									
Worldwide, All Operating Systems		6.7	10.8	14.9	11.5	11.8	11.9	12.5	
Worldwide									
UNIX		7.5	11.6	11.9	9.0	8.1	8.6	8.7	
Windows NT		NA	1,950.4	234.2	59.8	53.4	37.8	35.0	
Personal Computer		11.6	11.5	11.8	11.3	10.6	10.1	10.1	
Host/Proprietary		-16.7	-35.6	-28.3	-32.5	-36.6	-32.2	-30.4	
All Operating Systems									
North America		10.0	9.7	12.5	14.3	15.5	14.5	13.2	
Europe		-2.4	12.0	19.4	10.7	10.0	10.4	12.0	
Japan		7.7	9.3	9.8	8.2	8.4	8.6	9.4	
Asia/Pacific		51.3	22.9	25.4	13.8	14.1	16.5	21.5	
Rest of World		53.2	1.7	17.7	11.5	12.6	14.6	16.3	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-1
CAD/CAM/CAE/GIS Software History and Forecast
Detail Asia/Pacific Forecast, All Applications, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	17,792	36,762	49,049	62,700	76,700	92,600	112,000	136,200	23
Seats	18,328	38,209	49,859	63,500	77,300	93,100	112,500	136,500	22
Year-to-Year Increase (%)	25	108	30	27	22	20	21	21	
Installed Base									
CPUs	48,764	81,094	123,580	175,700	234,000	292,400	346,100	408,900	27
Seats	53,245	86,005	128,189	180,100	238,300	296,800	350,700	413,700	26
Year-to-Year Increase (%)	39	62	49	41	32	25	18	18	
REVENUE DATA ($M)									
CPU Revenue	199	279	340	413	477	558	650	799	19
Terminal Revenue	10	8	15	14	10	9	8	7	-15
Peripheral Revenue	16	17	17	24	27	30	33	37	17
Hardware Revenue	224	305	373	451	514	597	691	843	18
Year-to-Year Increase (%)	12	36	22	21	14	16	16	22	
Software Revenue	137	207	255	320	364	415	484	587	18
Year-to-Year Increase (%)	52	51	23	25	14	14	17	21	
Software Service	49	67	86	103	112	120	132	150	12
Hardware Service	45	62	70	81	87	96	107	125	12
Service Revenue	94	129	155	183	198	216	239	274	12
Year-to-Year Increase (%)	81	38	20	18	8	9	11	15	
Total Factory Revenue	455	641	783	954	1,076	1,228	1,414	1,704	17
Year-to-Year Increase (%)	33	41	22	22	13	14	15	21	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-2
CAD/CAM/CAE/GIS Software History and Forecast
Detail Asia/Pacific Forecast, Mechanical, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	7,621	14,025	18,634	23,300	28,300	33,700	39,300	44,800	19
Seats	8,031	15,095	19,117	23,900	28,800	34,100	39,700	45,100	19
Year-to-Year Increase (%)	40	88	27	25	20	18	16	14	
Installed Base									
CPUs	18,345	30,837	47,213	66,400	87,400	108,200	125,500	142,600	25
Seats	21,562	34,362	50,423	69,500	90,400	111,300	128,800	146,100	24
Year-to-Year Increase (%)	43	59	47	38	30	23	16	13	
REVENUE DATA ($M)									
CPU Revenue	75	95	108	121	138	157	175	195	12
Terminal Revenue	7	6	10	11	8	8	7	6	-9
Peripheral Revenue	11	9	9	11	13	15	17	18	16
Hardware Revenue	93	110	128	143	159	180	199	219	11
Year-to-Year Increase (%)	3	18	16	12	11	13	11	11	
Software Revenue	49	72	81	90	101	113	126	139	11
Year-to-Year Increase (%)	65	45	13	11	12	12	12	11	
Software Service	15	22	24	26	27	28	30	33	6
Hardware Service	18	21	22	22	24	25	28	30	7
Service Revenue	33	43	46	48	51	54	58	63	7
Year-to-Year Increase (%)	38	32	5	5	5	6	8	8	
Total Factory Revenue	175	225	254	281	310	346	382	422	11
Year-to-Year Increase (%)	22	28	13	11	10	12	11	10	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-3
CAD/CAM/CAE/GIS Software History and Forecast
Detail Asia/Pacific Forecast, AEC, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	2,802	8,474	12,168	15,300	18,600	22,600	27,500	33,600	23
Seats	2,854	8,616	12,239	15,300	18,600	22,600	27,500	33,700	22
Year-to-Year Increase (%)	20	202	42	25	21	21	22	22	
Installed Base									
CPUs	8,487	16,059	26,907	40,200	54,900	69,200	81,800	97,500	29
Seats	8,962	16,575	27,376	40,600	55,300	69,600	82,300	98,000	29
Year-to-Year Increase (%)	35	85	65	48	36	26	18	19	
REVENUE DATA ($M)									
CPU Revenue	15	29	41	54	65	78	90	107	21
Terminal Revenue	1	1	0	0	0	0	0	0	-6
Peripheral Revenue	2	1	2	2	2	2	2	3	12
Hardware Revenue	18	31	43	56	68	81	93	110	21
Year-to-Year Increase (%)	-14	72	40	30	21	19	15	19	
Software Revenue	11	24	35	43	50	58	67	80	18
Year-to-Year Increase (%)	-6	117	48	24	16	15	16	19	
Software Service	3	4	4	6	6	7	7	8	16
Hardware Service	3	4	5	6	7	7	8	9	13
Service Revenue	5	7	9	12	13	14	15	17	14
Year-to-Year Increase (%)	39	38	20	36	9	7	7	15	
Total Factory Revenue	34	62	87	111	131	152	175	207	19
Year-to-Year Increase (%)	-6	81	41	28	18	17	15	19	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-4
CAD/CAM/CAE/GIS Software History and Forecast
Detail Asia/Pacific Forecast, GIS/Mapping, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	2,720	7,143	10,236	15,100	19,200	23,500	28,600	34,200	27
Seats	2,795	7,425	10,539	15,300	19,300	23,600	28,700	34,200	27
Year-to-Year Increase (%)	11	166	42	45	26	22	22	19	
Installed Base									
CPUs	7,782	14,270	23,446	36,800	52,700	69,000	84,100	100,800	34
Seats	8,161	14,861	24,256	37,800	53,700	69,900	85,100	101,800	33
Year-to-Year Increase (%)	42	82	63	56	42	30	22	20	
REVENUE DATA ($M)									
CPU Revenue	29	62	89	128	148	175	201	231	21
Terminal Revenue	1	1	5	3	2	1	1	0	-43
Peripheral Revenue	2	7	7	11	12	13	13	14	16
Hardware Revenue	33	70	100	142	162	189	215	246	20
Year-to-Year Increase (%)	8	116	43	42	14	17	14	15	
Software Revenue	22	49	65	104	120	136	154	174	22
Year-to-Year Increase (%)	48	125	35	59	15	13	14	13	
Software Service	7	13	19	28	31	34	37	40	16
Hardware Service	6	14	21	28	31	35	38	43	15
Service Revenue	14	27	41	56	62	68	75	83	15
Year-to-Year Increase (%)	93	99	48	39	10	11	10	11	
Total Factory Revenue	68	146	206	303	343	393	444	503	19
Year-to-Year Increase (%)	31	115	41	47	13	15	13	13	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-5
CAD/CAM/CAE/GIS Software History and Forecast
Detail Asia/Pacific Forecast, Electronic Design Automation, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	4,649	7,120	8,010	9,000	10,600	12,800	16,600	23,500	24
Seats	4,648	7,074	7,963	9,000	10,600	12,800	16,600	23,500	24
Year-to-Year Increase (%)	17	52	13	13	18	21	29	42	
Installed Base									
CPUs	14,150	19,927	26,014	32,300	39,000	46,000	54,600	67,900	21
Seats	14,560	20,206	26,134	32,300	38,900	45,900	54,500	67,800	21
Year-to-Year Increase (%)	35	39	29	24	20	18	19	24	
REVENUE DATA ($M)									
CPU Revenue	79	93	101	110	125	147	184	265	21
Terminal Revenue	1	1	0	-	-	-	-	-	NA
Peripheral Revenue	1	0	0	0	0	1	1	2	46
Hardware Revenue	81	94	101	110	126	148	185	267	21
Year-to-Year Increase (%)	35	16	8	8	14	17	25	44	
Software Revenue	55	64	74	82	93	109	137	195	22
Year-to-Year Increase (%)	63	15	16	12	14	17	25	42	
Software Service	24	28	38	43	47	51	58	69	13
Hardware Service	18	23	22	24	26	29	33	43	14
Service Revenue	42	51	60	67	73	80	91	111	13
Year-to-Year Increase (%)	149	22	18	12	9	9	14	22	
Total Factory Revenue	178	208	235	259	292	337	413	573	20
Year-to-Year Increase (%)	61	17	13	10	13	15	23	39	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-6
CAD/CAM/CAE/GIS Software History and Forecast
Detail China Forecast, All Applications, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	1,885	2,690	3,859	7,000	8,600	10,500	12,900	15,600	32
Seats	1,973	2,835	3,933	7,000	8,600	10,600	12,900	15,600	32
Year-to-Year Increase (%)	61	44	39	78	23	22	22	21	
Installed Base									
CPUs	4,368	6,670	10,005	16,000	23,100	31,100	38,200	46,000	36
Seats	5,083	7,357	10,585	16,500	23,500	31,400	38,500	46,300	34
Year-to-Year Increase (%)	45	45	44	56	43	34	23	20	
REVENUE DATA ($M)									
CPU Revenue	24	30	33	42	49	58	69	87	21
Terminal Revenue	1	1	2	1	1	0	0	0	-34
Peripheral Revenue	3	2	2	4	5	5	6	7	27
Hardware Revenue	28	33	37	47	54	64	76	94	21
Year-to-Year Increase (%)	39	17	10	27	16	19	18	24	
Software Revenue	16	20	23	31	36	41	48	56	20
Year-to-Year Increase (%)	203	23	13	38	15	16	16	17	
Software Service	6	7	8	10	11	12	13	15	13
Hardware Service	6	8	7	8	9	10	11	14	14
Service Revenue	12	14	15	18	19	22	25	29	14
Year-to-Year Increase (%)	691	24	6	16	10	12	13	18	
Total Factory Revenue	56	68	75	96	109	127	149	179	19
Year-to-Year Increase (%)	106	20	10	28	14	17	17	21	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-7
CAD/CAM/CAE/GIS Software History and Forecast
Detail China Forecast, Mechanical, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	1,257	1,365	1,940	3,600	4,400	5,300	6,300	7,200	30
Seats	1,325	1,480	1,953	3,600	4,400	5,300	6,300	7,200	30
Year-to-Year Increase (%)	74	12	32	83	24	19	19	14	
Installed Base									
CPUs	2,525	3,718	5,405	8,400	11,900	15,900	19,200	22,400	33
Seats	3,055	4,229	5,795	8,700	12,200	16,000	19,300	22,500	31
Year-to-Year Increase (%)	55	38	37	50	40	32	21	16	
REVENUE DATA ($M)									
CPU Revenue	14	14	15	19	22	26	29	33	18
Terminal Revenue	1	1	0	0	0	0	0	0	-19
Peripheral Revenue	2	2	2	3	4	4	5	6	29
Hardware Revenue	17	16	16	22	26	30	34	39	19
Year-to-Year Increase (%)	23	-7	3	31	19	17	14	12	
Software Revenue	10	10	11	14	16	17	20	22	16
Year-to-Year Increase (%)	141	3	7	30	14	12	14	11	
Software Service	3	4	4	4	4	5	5	6	10
Hardware Service	3	3	3	4	4	5	5	6	12
Service Revenue	7	7	7	8	9	9	10	12	11
Year-to-Year Increase (%)	586	7	-3	13	11	10	11	10	
Total Factory Revenue	33	33	34	43	50	57	65	72	16
Year-to-Year Increase (%)	77	-1	3	27	16	14	14	11	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-8
CAD/CAM/CAE/GIS Software History and Forecast
Detail China Forecast, AEC, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	144	327	699	1,700	2,000	2,500	3,100	3,800	40
Seats	151	342	700	1,700	2,000	2,500	3,100	3,800	40
Year-to-Year Increase (%)	-19	127	104	143	21	22	23	22	
Installed Base									
CPUs	659	897	1,476	3,000	4,900	7,000	8,800	10,800	49
Seats	724	962	1,524	3,100	4,900	7,000	8,800	10,800	48
Year-to-Year Increase (%)	16	33	58	101	60	43	25	23	
REVENUE DATA ($M)									
CPU Revenue	1	4	5	7	8	9	11	13	23
Terminal Revenue	0	0	0	0	0	0	0	0	22
Peripheral Revenue	0	0	0	0	0	0	0	0	8
Hardware Revenue	2	4	5	7	8	10	11	13	22
Year-to-Year Increase (%)	-28	138	21	45	18	18	15	17	
Software Revenue	1	2	3	5	5	6	7	9	21
Year-to-Year Increase (%)	27	209	44	42	15	16	17	19	
Software Service	0	1	0	1	1	1	1	1	11
Hardware Service	0	1	1	1	1	1	1	1	7
Service Revenue	1	2	1	1	2	2	2	2	9
Year-to-Year Increase (%)	182	200	-10	9	7	7	8	13	
Total Factory Revenue	3	8	10	13	15	18	21	24	20
Year-to-Year Increase (%)	-5	167	22	39	16	16	15	18	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-9
CAD/CAM/CAE/GIS Software History and Forecast
Detail China Forecast, GIS/Mapping, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	124	535	753	1,200	1,600	2,100	2,600	3,100	32
Seats	138	573	820	1,300	1,600	2,100	2,600	3,100	30
Year-to-Year Increase (%)	-4	315	43	57	25	29	24	19	
Installed Base									
CPUs	387	880	1,578	2,800	4,100	5,700	7,200	8,800	41
Seats	442	963	1,715	2,900	4,300	5,900	7,400	9,000	39
Year-to-Year Increase (%)	30	118	78	71	48	36	25	22	
REVENUE DATA ($M)									
CPU Revenue	3	6	8	11	12	15	17	20	19
Terminal Revenue	0	0	2	1	0	0	0	0	-44
Peripheral Revenue	0	0	0	1	1	1	1	1	20
Hardware Revenue	3	6	10	12	13	16	18	21	15
Year-to-Year Increase (%)	64	97	58	20	8	21	15	14	
Software Revenue	2	4	5	9	10	12	14	16	24
Year-to-Year Increase (%)	512	123	19	65	15	20	16	13	
Software Service	1	1	2	2	3	3	3	3	12
Hardware Service	1	1	2	2	2	3	3	3	14
Service Revenue	2	3	4	4	5	6	6	7	13
Year-to-Year Increase (%)	1,873	24	43	24	7	15	11	9	
Total Factory Revenue	7	13	19	25	28	33	38	43	18
Year-to-Year Increase (%)	201	84	42	33	10	19	14	13	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-10
CAD/CAM/CAE/GIS Software History and Forecast
Detail China Forecast, Electronic Design Automation, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	360	463	467	500	600	700	1,000	1,600	28
Seats	360	440	461	500	600	700	1,000	1,600	28
Year-to-Year Increase (%)	166	22	5	-2	22	27	40	64	
Installed Base									
CPUs	796	1,175	1,546	1,800	2,200	2,500	3,000	4,100	21
Seats	862	1,203	1,550	1,800	2,100	2,500	3,000	4,000	21
Year-to-Year Increase (%)	53	40	29	18	17	16	21	35	
REVENUE DATA ($M)									
CPU Revenue	6	7	5	6	7	8	12	21	32
Terminal Revenue	0	0	-	-	-	-	-	-	NA
Peripheral Revenue	0	0	0	0	0	0	0	0	79
Hardware Revenue	6	7	5	6	7	9	12	21	32
Year-to-Year Increase (%)	186	10	-25	9	19	26	40	78	
Software Revenue	4	4	4	4	5	6	7	10	23
Year-to-Year Increase (%)	659	-12	0	15	16	18	25	40	
Software Service	1	1	2	3	3	3	4	5	19
Hardware Service	1	2	1	1	1	2	2	3	24
Service Revenue	2	3	3	4	4	5	6	9	21
Year-to-Year Increase (%)	1,015	34	6	18	12	13	21	41	
Total Factory Revenue	13	14	12	14	16	19	25	40	27
Year-to-Year Increase (%)	332	7	-11	13	16	20	31	58	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-11
CAD/CAM/CAE/GIS Software History and Forecast
Detail Hong Kong Forecast, All Applications, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	1,633	2,654	3,304	4,100	5,000	6,000	7,200	8,600	21
Seats	1,683	2,765	3,302	4,100	5,000	6,000	7,200	8,600	21
Year-to-Year Increase (%)	19	64	19	25	21	20	20	19	
Installed Base									
CPUs	4,582	6,794	9,504	12,700	16,100	19,600	22,900	26,500	23
Seats	5,145	7,307	9,865	12,900	16,300	19,800	23,000	26,600	22
Year-to-Year Increase (%)	32	42	35	31	26	21	16	16	
REVENUE DATA ($M)									
CPU Revenue	19	21	23	26	29	34	39	47	16
Terminal Revenue	1	1	0	0	0	0	0	0	-19
Peripheral Revenue	3	2	2	2	3	3	3	4	17
Hardware Revenue	22	24	25	28	32	37	43	51	15
Year-to-Year Increase (%)	-13	7	4	12	14	16	15	19	
Software Revenue	13	15	16	19	22	24	28	34	16
Year-to-Year Increase (%)	20	14	10	19	13	14	16	19	
Software Service	3	5	6	6	7	7	8	9	11
Hardware Service	4	5	5	5	6	6	7	8	10
Service Revenue	7	10	11	11	12	13	15	17	10
Year-to-Year Increase (%)	93	41	10	8	8	9	12	16	
Total Factory Revenue	42	48	51	58	66	75	86	102	15
Year-to-Year Increase (%)	5	15	7	13	12	14	15	19	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-12
CAD/CAM/CAE/GIS Software History and Forecast
Detail Hong Kong Forecast, Mechanical, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	1,151	1,523	1,872	2,400	2,800	3,300	3,900	4,400	19
Seats	1,191	1,612	1,881	2,400	2,800	3,300	3,900	4,400	19
Year-to-Year Increase (%)	68	35	17	25	19	18	17	14	
Installed Base									
CPUs	2,505	3,836	5,436	7,200	9,100	11,000	12,600	14,200	21
Seats	2,925	4,220	5,715	7,400	9,300	11,200	12,700	14,300	20
Year-to-Year Increase (%)	48	44	35	30	25	20	14	12	
REVENUE DATA ($M)									
CPU Revenue	11	12	11	12	14	16	18	20	12
Terminal Revenue	1	1	0	0	0	0	0	0	-20
Peripheral Revenue	2	1	1	2	2	2	3	3	17
Hardware Revenue	14	14	13	14	16	18	21	23	12
Year-to-Year Increase (%)	12	1	-7	9	13	14	11	11	
Software Revenue	8	9	8	9	10	11	12	14	11
Year-to-Year Increase (%)	106	10	-5	12	10	11	12	11	
Software Service	1	3	3	3	3	3	3	3	6
Hardware Service	2	3	3	2	3	3	3	3	7
Service Revenue	4	6	5	5	5	6	6	7	6
Year-to-Year Increase (%)	253	55	-9	3	5	7	8	8	
Total Factory Revenue	25	28	26	28	32	35	39	43	11
Year-to-Year Increase (%)	47	11	-7	9	11	12	11	10	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-13
CAD/CAM/CAE/GIS Software History and Forecast
Detail Hong Kong Forecast, AEC, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	138	450	579	700	900	1,100	1,300	1,600	23
Seats	145	465	580	700	900	1,100	1,300	1,600	23
Year-to-Year Increase (%)	-1	221	25	28	20	21	22	22	
Installed Base									
CPUs	562	934	1,414	2,000	2,700	3,400	4,000	4,700	27
Seats	622	993	1,459	2,100	2,700	3,400	4,000	4,700	27
Year-to-Year Increase (%)	16	60	47	42	32	24	17	18	
REVENUE DATA ($M)									
CPU Revenue	1	2	2	3	3	4	5	6	20
Terminal Revenue	0	0	0	0	0	0	0	0	3
Peripheral Revenue	0	0	0	0	0	0	0	0	8
Hardware Revenue	1	2	2	3	4	4	5	6	19
Year-to-Year Increase (%)	-30	52	12	26	18	18	14	18	
Software Revenue	1	1	2	2	2	3	3	4	17
Year-to-Year Increase (%)	-8	124	25	21	15	15	16	19	
Software Service	0	0	0	0	0	0	0	0	9
Hardware Service	0	0	0	0	0	1	1	1	10
Service Revenue	0	1	1	1	1	1	1	1	9
Year-to-Year Increase (%)	146	49	6	13	7	6	7	14	
Total Factory Revenue	2	4	5	6	7	8	9	11	17
Year-to-Year Increase (%)	-13	69	16	22	16	16	14	18	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-14
CAD/CAM/CAE/GIS Software History and Forecast
Detail Hong Kong Forecast, GIS/Mapping, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	54	262	429	600	800	1,000	1,300	1,500	28
Seats	58	274	426	600	800	1,000	1,300	1,500	29
Year-to-Year Increase (%)	-43	370	56	47	29	24	25	20	
Installed Base									
CPUs	277	498	877	1,500	2,200	2,900	3,600	4,400	38
Seats	315	538	905	1,500	2,200	2,900	3,600	4,400	37
Year-to-Year Increase (%)	7	71	68	63	47	33	24	22	
REVENUE DATA ($M)									
CPU Revenue	1	3	4	6	6	7	9	10	19
Terminal Revenue	0	0	0	0	0	0	0	0	-38
Peripheral Revenue	0	0	0	0	0	0	1	1	17
Hardware Revenue	1	3	4	6	7	8	9	11	19
Year-to-Year Increase (%)	-21	117	54	33	14	18	16	14	
Software Revenue	1	2	3	4	5	6	7	8	21
Year-to-Year Increase (%)	77	142	71	51	16	15	16	13	
Software Service	0	0	1	1	1	1	1	2	15
Hardware Service	0	1	1	1	1	1	2	2	13
Service Revenue	1	1	2	2	3	3	3	3	14
Year-to-Year Increase (%)	296	80	85	27	9	12	13	10	
Total Factory Revenue	3	6	9	13	14	17	19	22	19
Year-to-Year Increase (%)	16	116	65	37	14	16	16	13	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-15
CAD/CAM/CAE/GIS Software History and Forecast
Detail Hong Kong Forecast, Electronic Design Automation, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	290	420	423	400	500	600	800	1,100	20
Seats	289	414	415	400	500	600	800	1,100	21
Year-to-Year Increase (%)	-37	43	0	-2	19	21	29	40	
Installed Base									
CPUs	1,238	1,525	1,776	2,000	2,200	2,400	2,700	3,200	13
Seats	1,284	1,556	1,786	2,000	2,100	2,400	2,700	3,200	13
Year-to-Year Increase (%)	18	21	15	10	9	9	14	21	
REVENUE DATA ($M)									
CPU Revenue	6	5	5	5	5	6	8	12	18
Terminal Revenue	0	0	-	-	-	-	-	-	NA
Peripheral Revenue	0	0	0	0	0	0	0	0	70
Hardware Revenue	6	5	5	5	5	6	8	12	19
Year-to-Year Increase (%)	-40	-15	0	-5	15	17	26	46	
Software Revenue	4	3	3	4	4	5	6	9	21
Year-to-Year Increase (%)	-36	-18	10	6	14	17	26	44	
Software Service	1	1	2	2	2	3	3	4	15
Hardware Service	1	1	1	1	1	1	2	2	14
Service Revenue	2	2	3	3	3	4	4	6	15
Year-to-Year Increase (%)	0	7	27	5	10	10	18	33	
Total Factory Revenue	12	10	11	11	13	15	18	26	18
Year-to-Year Increase (%)	-34	-12	9	1	13	15	24	42	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-16
CAD/CAM/CAE/GIS Software History and Forecast
Detail Korea Forecast, All Applications, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	3,868	8,578	11,204	13,300	16,000	19,100	23,100	28,400	20
Seats	3,992	8,827	11,366	13,500	16,200	19,200	23,100	28,500	20
Year-to-Year Increase (%)	89	121	29	19	20	19	20	23	
Installed Base									
CPUs	8,997	16,792	26,953	38,400	50,700	62,600	73,400	86,400	26
Seats	10,011	17,800	27,868	39,200	51,500	63,500	74,300	87,300	26
Year-to-Year Increase (%)	48	78	57	41	31	23	17	18	
REVENUE DATA ($M)									
CPU Revenue	49	70	84	96	110	127	149	186	17
Terminal Revenue	2	2	4	3	2	2	2	2	-16
Peripheral Revenue	3	2	3	3	4	4	5	5	13
Hardware Revenue	54	74	90	102	116	133	155	193	16
Year-to-Year Increase (%)	36	37	22	13	13	15	16	25	
Software Revenue	34	52	63	74	84	96	113	144	18
Year-to-Year Increase (%)	83	54	22	16	14	14	18	27	
Software Service	11	18	25	29	31	33	37	42	11
Hardware Service	11	16	17	19	20	22	24	28	11
Service Revenue	23	34	42	47	51	55	61	69	11
Year-to-Year Increase (%)	366	49	22	14	8	8	10	15	
Total Factory Revenue	111	160	195	223	251	284	329	407	16
Year-to-Year Increase (%)	76	45	22	14	12	13	16	24	

NA = Not applicable

Source: Dataquest (October 1995)

Table B-17
CAD/CAM/CAE/GIS Software History and Forecast
Detail Korea Forecast, Mechanical, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	1,418	3,222	4,232	4,800	5,800	6,900	8,000	9,100	16
Seats	1,523	3,425	4,408	5,000	5,900	7,000	8,100	9,200	16
Year-to-Year Increase (%)	76	125	29	13	19	18	15	14	
Installed Base									
CPUs	3,176	6,111	9,972	14,100	18,500	22,600	25,800	29,100	24
Seats	3,942	6,883	10,730	14,800	19,200	23,300	26,700	30,000	23
Year-to-Year Increase (%)	41	75	56	38	30	22	14	12	
REVENUE DATA ($M)									
CPU Revenue	14	19	23	25	28	31	34	38	11
Terminal Revenue	2	1	4	3	2	2	2	2	-15
Peripheral Revenue	2	2	2	2	2	2	3	3	10
Hardware Revenue	18	22	28	29	32	36	39	43	9
Year-to-Year Increase (%)	-1	22	31	4	9	11	9	10	
Software Revenue	8	14	17	19	21	23	25	28	11
Year-to-Year Increase (%)	67	73	20	10	11	11	11	11	
Software Service	3	5	5	6	6	6	6	7	6
Hardware Service	4	4	4	4	4	5	5	5	5
Service Revenue	6	8	9	10	10	11	11	12	5
Year-to-Year Increase (%)	388	32	13	6	3	5	6	8	
Total Factory Revenue	32	44	55	58	63	69	76	83	9
Year-to-Year Increase (%)	34	37	24	6	9	10	9	10	

NA = Not applicable

Source: Dataquest (October 1995)

Table B-18
CAD/CAM/CAE/GIS Software History and Forecast
Detail Korea Forecast, AEC, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	738	2,167	3,091	3,600	4,400	5,300	6,400	7,800	20
Seats	751	2,198	3,093	3,600	4,400	5,300	6,400	7,800	20
Year-to-Year Increase (%)	157	193	41	17	21	21	21	22	
Installed Base									
CPUs	1,526	3,559	6,466	9,700	13,200	16,400	19,200	22,700	29
Seats	1,623	3,665	6,550	9,700	13,200	16,500	19,300	22,800	28
Year-to-Year Increase (%)	71	126	79	49	36	25	17	18	
REVENUE DATA ($M)									
CPU Revenue	3	7	9	12	14	17	20	24	21
Terminal Revenue	0	0	0	0	0	0	0	0	-9
Peripheral Revenue	0	0	1	1	1	1	1	1	17
Hardware Revenue	4	7	10	13	15	18	21	25	21
Year-to-Year Increase (%)	6	90	35	31	21	20	15	19	
Software Revenue	3	6	8	10	12	14	16	19	18
Year-to-Year Increase (%)	-35	122	36	25	15	15	15	19	
Software Service	1	1	1	2	2	3	3	3	19
Hardware Service	0	1	1	1	1	1	1	2	14
Service Revenue	1	2	2	3	4	4	4	5	17
Year-to-Year Increase (%)	403	54	9	51	10	7	7	16	
Total Factory Revenue	8	15	20	26	31	36	41	48	19
Year-to-Year Increase (%)	-2	95	32	31	17	16	14	19	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-19
CAD/CAM/CAE/GIS Software History and Forecast
Detail Korea Forecast, GIS/Mapping, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	207	708	919	1,100	1,300	1,600	2,000	2,300	21
Seats	215	737	916	1,100	1,300	1,600	2,000	2,300	21
Year-to-Year Increase (%)	19	243	24	15	27	22	21	19	
Installed Base									
CPUs	566	1,214	2,056	3,000	4,000	5,000	5,900	7,000	28
Seats	632	1,295	2,118	3,000	4,100	5,000	5,900	7,000	27
Year-to-Year Increase (%)	35	105	64	43	34	24	18	18	
REVENUE DATA ($M)									
CPU Revenue	2	5	6	9	10	12	14	16	19
Terminal Revenue	0	0	0	0	0	0	0	0	-37
Peripheral Revenue	0	0	0	1	1	1	1	1	14
Hardware Revenue	3	5	7	10	11	13	14	16	19
Year-to-Year Increase (%)	-15	103	34	46	11	15	12	14	
Software Revenue	1	4	5	7	8	9	11	12	20
Year-to-Year Increase (%)	97	152	30	54	15	13	13	13	
Software Service	0	1	1	2	2	2	2	2	19
Hardware Service	0	1	1	2	2	2	3	3	14
Service Revenue	1	1	2	4	4	4	5	5	16
Year-to-Year Increase (%)	113	179	68	54	6	9	8	10	
Total Factory Revenue	4	10	14	21	23	27	30	34	19
Year-to-Year Increase (%)	14	128	38	50	12	13	12	13	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-20
CAD/CAM/CAE/GIS Software History and Forecast
Detail Korea Forecast, Electronic Design Automation, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	1,505	2,482	2,962	3,800	4,500	5,400	6,700	9,200	25
Seats	1,503	2,468	2,948	3,800	4,500	5,400	6,700	9,200	26
Year-to-Year Increase (%)	95	64	19	30	17	19	26	37	
Installed Base									
CPUs	3,729	5,907	8,459	11,600	15,000	18,700	22,500	27,600	27
Seats	3,815	5,957	8,470	11,600	15,000	18,600	22,400	27,600	27
Year-to-Year Increase (%)	51	56	42	37	29	24	20	23	
REVENUE DATA ($M)									
CPU Revenue	30	40	45	50	57	67	81	108	19
Terminal Revenue	0	0	-	-	-	-	-	-	NA
Peripheral Revenue	0	0	0	0	0	0	0	1	22
Hardware Revenue	30	40	46	50	58	67	81	109	19
Year-to-Year Increase (%)	96	33	13	10	15	16	21	35	
Software Revenue	21	28	33	37	43	50	62	86	21
Year-to-Year Increase (%)	149	31	20	12	14	16	24	39	
Software Service	8	12	17	19	21	23	25	29	11
Hardware Service	7	10	10	11	12	13	15	18	12
Service Revenue	15	22	28	30	33	36	40	47	11
Year-to-Year Increase (%)	374	51	23	9	10	9	12	17	
Total Factory Revenue	66	91	107	118	134	153	183	242	18
Year-to-Year Increase (%)	144	37	18	11	13	14	20	32	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-21
CAD/CAM/CAE/GIS Software History and Forecast
Detail Singapore Forecast, All Applications, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	1,921	3,330	3,965	5,800	7,200	8,800	10,700	13,100	27
Seats	2,011	3,442	4,156	6,100	7,400	8,900	10,800	13,200	26
Year-to-Year Increase (%)	92	71	21	46	21	21	21	21	
Installed Base									
CPUs	3,791	6,888	10,492	15,500	21,100	27,100	32,600	38,800	30
Seats	4,218	7,336	11,035	16,200	21,900	28,000	33,600	39,900	29
Year-to-Year Increase (%)	74	74	50	47	35	28	20	19	
REVENUE DATA ($M)									
CPU Revenue	22	30	32	37	43	50	59	75	19
Terminal Revenue	1	1	4	4	3	3	2	2	-10
Peripheral Revenue	2	1	1	2	2	3	3	4	20
Hardware Revenue	25	32	37	44	48	56	65	80	17
Year-to-Year Increase (%)	26	29	16	18	11	16	16	23	
Software Revenue	15	21	23	29	33	38	44	52	17
Year-to-Year Increase (%)	72	39	9	26	14	14	16	18	
Software Service	9	7	8	9	9	10	11	11	6
Hardware Service	5	7	7	7	8	9	10	11	11
Service Revenue	14	14	15	16	17	19	20	23	8
Year-to-Year Increase (%)	358	-1	5	6	7	8	9	12	
Total Factory Revenue	55	68	76	89	99	113	130	155	15
Year-to-Year Increase (%)	72	24	12	18	11	14	15	20	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-22
CAD/CAM/CAE/GIS Software History and Forecast
Detail Singapore Forecast, Mechanical, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	949	1,241	1,649	2,700	3,200	3,900	4,600	5,200	26
Seats	1,004	1,304	1,750	2,900	3,400	4,000	4,700	5,300	25
Year-to-Year Increase (%)	138	30	34	66	17	19	16	13	
Installed Base									
CPUs	1,682	2,823	4,325	6,600	9,200	12,000	14,300	16,400	31
Seats	1,978	3,114	4,648	7,100	9,800	12,700	15,000	17,300	30
Year-to-Year Increase (%)	79	57	49	52	38	30	19	15	
REVENUE DATA ($M)									
CPU Revenue	9	12	13	15	16	19	21	23	12
Terminal Revenue	1	1	2	4	3	3	2	2	-1
Peripheral Revenue	1	1	1	1	2	2	2	3	23
Hardware Revenue	11	13	16	20	21	23	26	28	12
Year-to-Year Increase (%)	44	17	22	23	5	12	9	9	
Software Revenue	6	8	9	10	11	13	15	16	11
Year-to-Year Increase (%)	170	31	13	11	10	13	12	11	
Software Service	4	3	3	3	4	4	4	4	5
Hardware Service	2	3	3	3	3	4	4	5	9
Service Revenue	6	6	6	7	7	8	8	9	7
Year-to-Year Increase (%)	792	5	3	2	5	10	9	8	
Total Factory Revenue	24	28	32	37	39	44	48	53	11
Year-to-Year Increase (%)	118	18	15	15	6	12	10	9	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-23
CAD/CAM/CAE/GIS Software History and Forecast
Detail Singapore Forecast, AEC, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	95	400	566	900	1,100	1,300	1,600	2,000	28
Seats	103	410	567	900	1,100	1,300	1,600	2,000	28
Year-to-Year Increase (%)	1	299	38	55	23	22	22	22	
Installed Base									
CPUs	360	716	1,220	2,000	2,900	3,900	4,700	5,700	36
Seats	403	760	1,255	2,000	2,900	3,900	4,700	5,700	35
Year-to-Year Increase (%)	23	89	65	62	44	32	21	21	
REVENUE DATA ($M)									
CPU Revenue	1	2	3	3	4	5	5	6	19
Terminal Revenue	0	0	0	0	0	0	0	0	19
Peripheral Revenue	0	0	0	0	0	0	0	0	2
Hardware Revenue	1	2	3	3	4	5	6	6	19
Year-to-Year Increase (%)	-32	119	42	23	21	19	15	18	
Software Revenue	0	1	2	2	3	3	4	5	18
Year-to-Year Increase (%)	22	243	58	22	17	16	16	19	
Software Service	0	0	0	0	0	0	0	0	9
Hardware Service	0	0	0	0	0	0	0	1	5
Service Revenue	0	0	1	1	1	1	1	1	6
Year-to-Year Increase (%)	341	26	29	2	8	5	6	12	
Total Factory Revenue	2	4	5	6	8	9	10	12	17
Year-to-Year Increase (%)	-3	125	46	20	18	16	15	18	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-24
CAD/CAM/CAE/GIS Software History and Forecast
Detail Singapore Forecast, GIS/Mapping, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	188	809	1,067	1,700	2,200	2,700	3,300	4,000	30
Seats	213	856	1,158	1,800	2,200	2,700	3,400	4,000	28
Year-to-Year Increase (%)	207	302	35	53	27	22	22	19	
Installed Base									
CPUs	304	1,097	2,140	3,800	5,800	7,800	9,700	11,800	41
Seats	353	1,187	2,314	4,000	6,000	8,100	10,000	12,000	39
Year-to-Year Increase (%)	127	236	95	74	50	34	23	21	
REVENUE DATA ($M)									
CPU Revenue	4	9	11	13	16	19	21	24	17
Terminal Revenue	0	0	2	1	0	0	0	0	-47
Peripheral Revenue	0	0	0	1	1	1	1	1	18
Hardware Revenue	4	9	13	15	17	19	22	25	14
Year-to-Year Increase (%)	326	109	43	14	14	16	14	14	
Software Revenue	3	7	8	12	14	16	18	21	21
Year-to-Year Increase (%)	1,150	136	23	53	16	14	14	13	
Software Service	2	2	3	3	3	4	4	4	5
Hardware Service	1	2	2	2	3	3	3	3	9
Service Revenue	3	4	5	6	6	7	7	8	7
Year-to-Year Increase (%)	3,424	34	48	4	8	8	8	7	
Total Factory Revenue	10	19	26	33	37	42	48	53	15
Year-to-Year Increase (%)	643	96	37	24	13	14	13	12	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-25
CAD/CAM/CAE/GIS Software History and Forecast
Detail Singapore Forecast, Electronic Design Automation, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	689	880	683	500	700	800	1,200	1,900	23
Seats	691	872	680	500	700	800	1,200	1,900	23
Year-to-Year Increase (%)	53	26	-22	-20	22	28	42	58	
Installed Base									
CPUs	1,444	2,252	2,807	3,000	3,200	3,400	3,900	5,000	12
Seats	1,484	2,276	2,818	3,100	3,200	3,400	3,900	4,900	12
Year-to-Year Increase (%)	76	53	24	8	6	6	14	27	
REVENUE DATA ($M)									
CPU Revenue	8	8	5	6	7	8	12	21	32
Terminal Revenue	0	0	-	-	-	-	-	-	NA
Peripheral Revenue	0	-	0	0	0	0	0	0	-6
Hardware Revenue	8	8	5	6	7	8	12	21	31
Year-to-Year Increase (%)	-13	-6	-33	8	17	26	43	73	
Software Revenue	6	5	4	4	5	6	7	11	22
Year-to-Year Increase (%)	-2	-11	-25	8	13	16	27	47	
Software Service	4	2	2	2	2	2	2	3	11
Hardware Service	2	2	1	1	1	1	2	3	21
Service Revenue	5	4	3	3	3	4	4	5	15
Year-to-Year Increase (%)	131	-27	-33	21	8	8	15	25	
Total Factory Revenue	20	17	12	13	15	18	23	37	25
Year-to-Year Increase (%)	9	-13	-31	11	14	19	32	56	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-26
CAD/CAM/CAE/GIS Software History and Forecast
Detail Taiwan Forecast, All Applications, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	2,045	7,074	9,098	10,000	12,100	14,500	17,700	21,900	19
Seats	2,125	7,232	9,241	10,300	12,300	14,700	17,800	22,000	19
Year-to-Year Increase (%)	68	240	28	11	20	19	21	24	
Installed Base									
CPUs	5,571	12,079	20,462	29,400	38,800	47,600	55,700	65,900	26
Seats	6,230	12,728	21,088	30,100	39,600	48,500	56,800	67,000	26
Year-to-Year Increase (%)	35	104	66	43	32	22	17	18	
REVENUE DATA ($M)									
CPU Revenue	30	46	60	70	80	92	108	139	18
Terminal Revenue	1	1	3	5	3	3	2	2	-9
Peripheral Revenue	2	2	2	2	3	3	3	4	15
Hardware Revenue	34	49	66	77	86	98	114	145	17
Year-to-Year Increase (%)	46	45	33	18	11	14	17	27	
Software Revenue	19	36	45	53	59	68	81	104	18
Year-to-Year Increase (%)	164	84	27	17	13	15	19	29	
Software Service	7	11	15	18	19	21	23	27	13
Hardware Service	7	10	12	14	14	16	17	21	13
Service Revenue	14	20	26	32	34	36	40	48	13
Year-to-Year Increase (%)	565	39	31	19	6	8	12	19	
Total Factory Revenue	68	105	137	161	178	202	235	297	17
Year-to-Year Increase (%)	106	55	30	18	10	13	17	26	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-27
CAD/CAM/CAE/GIS Software History and Forecast
Detail Taiwan Forecast, Mechanical, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	1,086	3,054	3,985	4,100	5,000	5,900	6,900	7,800	15
Seats	1,160	3,173	4,092	4,300	5,100	6,000	7,000	7,900	14
Year-to-Year Increase (%)	83	173	29	5	20	17	16	14	
Installed Base									
CPUs	2,337	5,196	8,924	12,500	16,300	19,600	22,300	25,100	23
Seats	2,847	5,694	9,402	13,000	16,900	20,300	23,100	26,000	23
Year-to-Year Increase (%)	47	100	65	39	29	20	14	13	
REVENUE DATA ($M)									
CPU Revenue	11	17	19	22	25	28	31	34	12
Terminal Revenue	1	1	2	3	3	2	2	2	-3
Peripheral Revenue	2	1	1	1	2	2	2	2	9
Hardware Revenue	14	19	23	27	29	32	35	39	11
Year-to-Year Increase (%)	8	31	24	16	8	10	9	10	
Software Revenue	7	13	15	16	18	20	22	25	11
Year-to-Year Increase (%)	75	93	14	7	12	11	12	11	
Software Service	2	3	4	4	4	5	5	5	8
Hardware Service	3	3	4	4	4	4	5	5	7
Service Revenue	5	7	7	8	9	9	10	10	8
Year-to-Year Increase (%)	417	30	8	15	3	5	7	8	
Total Factory Revenue	26	38	45	51	56	61	67	73	10
Year-to-Year Increase (%)	45	47	18	13	8	10	10	10	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-28
CAD/CAM/CAE/GIS Software History and Forecast
Detail Taiwan Forecast, AEC, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	140	1,923	2,376	2,400	3,000	3,600	4,400	5,400	18
Seats	147	1,941	2,377	2,400	3,000	3,600	4,400	5,400	18
Year-to-Year Increase (%)	-22	1,222	22	1	23	22	22	22	
Installed Base									
CPUs	660	2,493	4,747	7,000	9,400	11,400	13,200	15,600	27
Seats	724	2,559	4,798	7,000	9,400	11,400	13,300	15,700	27
Year-to-Year Increase (%)	15	254	87	47	33	21	16	18	
REVENUE DATA ($M)									
CPU Revenue	1	5	7	9	11	13	14	17	21
Terminal Revenue	0	0	0	0	0	0	0	0	31
Peripheral Revenue	0	0	0	0	0	0	0	0	19
Hardware Revenue	1	5	7	9	11	13	15	17	21
Year-to-Year Increase (%)	-36	293	23	35	21	19	14	18	
Software Revenue	1	5	6	7	8	9	11	13	17
Year-to-Year Increase (%)	-2	610	25	19	17	16	16	19	
Software Service	0	0	0	1	1	1	1	1	25
Hardware Service	0	0	1	1	1	1	1	1	23
Service Revenue	0	1	1	2	2	2	2	3	24
Year-to-Year Increase (%)	152	57	18	127	7	4	4	13	
Total Factory Revenue	2	11	13	18	21	24	28	33	20
Year-to-Year Increase (%)	-17	330	24	35	18	16	14	18	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-29
CAD/CAM/CAE/GIS Software History and Forecast
Detail Taiwan Forecast, GIS/Mapping, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	48	712	768	900	1,100	1,400	1,700	2,000	21
Seats	54	733	817	900	1,100	1,400	1,700	2,000	19
Year-to-Year Increase (%)	-53	1,260	11	16	20	21	20	19	
Installed Base									
CPUs	281	952	1,670	2,500	3,400	4,200	5,000	5,900	29
Seats	327	1,009	1,764	2,700	3,600	4,400	5,200	6,100	28
Year-to-Year Increase (%)	5	209	75	50	34	23	18	17	
REVENUE DATA ($M)									
CPU Revenue	1	5	5	8	8	10	11	13	19
Terminal Revenue	0	0	1	1	1	0	0	0	-37
Peripheral Revenue	0	0	0	1	1	1	1	1	16
Hardware Revenue	1	5	7	9	10	11	12	13	15
Year-to-Year Increase (%)	-35	287	31	41	3	12	10	13	
Software Revenue	1	4	4	6	7	8	9	10	21
Year-to-Year Increase (%)	19	504	3	61	12	14	13	13	
Software Service	0	0	1	1	2	2	2	2	20
Hardware Service	0	1	1	2	2	2	2	2	16
Service Revenue	0	1	2	3	3	4	4	4	18
Year-to-Year Increase (%)	97	301	39	64	5	10	8	10	
Total Factory Revenue	2	10	12	19	20	22	25	28	18
Year-to-Year Increase (%)	-17	349	22	51	6	12	11	12	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-30
CAD/CAM/CAE/GIS Software History and Forecast
Detail Taiwan Forecast, Electronic Design Automation, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	770	1,384	1,968	2,600	3,100	3,700	4,800	6,700	28
Seats	764	1,385	1,954	2,600	3,100	3,700	4,800	6,700	28
Year-to-Year Increase (%)	133	81	41	35	16	20	29	41	
Installed Base									
CPUs	2,294	3,437	5,122	7,400	9,800	12,400	15,300	19,300	30
Seats	2,333	3,466	5,124	7,300	9,800	12,400	15,200	19,300	30
Year-to-Year Increase (%)	35	49	48	43	34	27	23	26	
REVENUE DATA ($M)									
CPU Revenue	17	20	29	32	36	42	52	75	21
Terminal Revenue	0	0	-	-	-	-	-	-	NA
Peripheral Revenue	0	0	0	0	0	0	0	1	95
Hardware Revenue	17	20	29	32	36	42	52	75	21
Year-to-Year Increase (%)	186	18	44	10	13	17	25	44	
Software Revenue	11	14	21	24	26	31	39	57	22
Year-to-Year Increase (%)	394	26	44	14	12	17	26	45	
Software Service	5	6	10	11	12	13	15	19	13
Hardware Service	4	5	7	7	7	8	10	12	14
Service Revenue	9	11	17	18	20	22	25	31	14
Year-to-Year Increase (%)	924	33	45	11	8	9	15	26	
Total Factory Revenue	37	46	66	74	82	94	116	163	20
Year-to-Year Increase (%)	307	24	45	12	11	15	23	40	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-31
CAD/CAM/CAE/GIS Software History and Forecast
Detail Rest of Asia Forecast, All Applications, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	6,441	12,435	17,618	22,400	27,700	33,600	40,500	48,600	22
Seats	6,545	13,108	17,861	22,500	27,800	33,600	40,600	48,600	22
Year-to-Year Increase (%)	-13	100	36	26	24	21	21	20	
Installed Base									
CPUs	21,456	31,871	46,164	63,800	84,100	104,300	123,300	145,200	26
Seats	22,557	33,476	47,747	65,200	85,400	105,600	124,600	146,500	25
Year-to-Year Increase (%)	32	48	43	37	31	24	18	18	
REVENUE DATA ($M)									
CPU Revenue	54	82	109	142	166	196	225	266	20
Terminal Revenue	2	2	2	1	1	1	0	0	-26
Peripheral Revenue	4	8	7	11	11	12	12	14	13
Hardware Revenue	60	92	118	153	178	208	238	280	19
Year-to-Year Increase (%)	-16	53	29	30	16	17	14	17	
Software Revenue	40	64	84	114	130	147	169	197	18
Year-to-Year Increase (%)	1	61	32	35	14	13	14	17	
Software Service	12	20	24	31	35	37	41	45	13
Hardware Service	11	17	22	28	30	34	38	43	14
Service Revenue	24	37	46	59	65	71	78	88	14
Year-to-Year Increase (%)	-35	55	25	29	9	10	10	12	
Total Factory Revenue	123	192	249	327	373	427	485	564	18
Year-to-Year Increase (%)	-16	56	29	31	14	14	14	16	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-32
CAD/CAM/CAE/GIS Software History and Forecast
Detail Rest of Asia Forecast, Mechanical, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	1,760	3,620	4,956	5,800	7,000	8,400	9,800	11,100	18
Seats	1,830	4,102	5,033	5,800	7,000	8,400	9,800	11,100	17
Year-to-Year Increase (%)	-22	124	23	15	21	19	17	14	
Installed Base									
CPUs	6,120	9,152	13,151	17,600	22,400	27,200	31,300	35,500	22
Seats	6,815	10,222	14,133	18,400	23,200	27,900	31,900	36,100	21
Year-to-Year Increase (%)	28	50	38	30	26	20	15	13	
REVENUE DATA ($M)									
CPU Revenue	15	23	27	29	33	38	42	46	11
Terminal Revenue	2	1	1	1	0	0	0	0	-23
Peripheral Revenue	2	2	2	2	2	2	2	2	4
Hardware Revenue	19	26	31	31	35	40	44	49	10
Year-to-Year Increase (%)	-24	41	15	1	14	14	11	11	
Software Revenue	11	18	21	22	25	28	31	35	11
Year-to-Year Increase (%)	-3	63	19	6	12	12	12	11	
Software Service	2	5	6	6	6	6	7	7	4
Hardware Service	3	5	5	5	5	5	5	6	3
Service Revenue	5	9	11	10	11	11	12	13	3
Year-to-Year Increase (%)	-72	79	13	-3	3	4	6	7	
Total Factory Revenue	35	54	62	64	71	79	87	96	9
Year-to-Year Increase (%)	-36	53	16	2	11	12	10	10	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-33
CAD/CAM/CAE/GIS Software History and Forecast
Detail Rest of Asia Forecast, AEC, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	1,546	3,207	4,857	6,000	7,300	8,800	10,700	13,100	22
Seats	1,558	3,260	4,922	6,000	7,300	8,800	10,700	13,100	22
Year-to-Year Increase (%)	6	109	51	22	22	21	22	22	
Installed Base									
CPUs	4,721	7,459	11,584	16,400	21,900	27,200	32,000	38,000	27
Seats	4,867	7,636	11,790	16,600	22,100	27,400	32,300	38,300	27
Year-to-Year Increase (%)	37	57	54	41	33	24	18	19	
REVENUE DATA ($M)									
CPU Revenue	8	10	16	20	25	30	35	41	21
Terminal Revenue	0	0	0	0	0	0	0	0	-22
Peripheral Revenue	1	0	0	1	1	1	1	1	9
Hardware Revenue	9	10	17	21	26	31	35	42	20
Year-to-Year Increase (%)	-7	16	65	25	22	20	15	19	
Software Revenue	6	8	14	17	20	23	26	31	17
Year-to-Year Increase (%)	12	39	73	21	16	15	16	19	
Software Service	1	1	1	2	2	2	2	2	12
Hardware Service	1	1	2	2	2	3	3	3	13
Service Revenue	2	2	3	4	4	5	5	6	13
Year-to-Year Increase (%)	-24	-12	58	23	10	8	8	17	
Total Factory Revenue	17	20	34	42	49	58	66	79	18
Year-to-Year Increase (%)	-5	20	68	23	18	17	15	19	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-34
CAD/CAM/CAE/GIS Software History and Forecast
Detail Rest of Asia Forecast, GIS/Mapping, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	2,100	4,117	6,299	9,500	12,100	14,700	17,900	21,300	28
Seats	2,117	4,252	6,402	9,600	12,100	14,800	17,900	21,400	27
Year-to-Year Increase (%)	11	101	51	50	27	22	21	19	
Installed Base									
CPUs	5,968	9,629	15,125	23,300	33,200	43,300	52,700	63,000	33
Seats	6,092	9,870	15,440	23,600	33,500	43,700	53,100	63,300	33
Year-to-Year Increase (%)	46	62	56	53	42	30	22	19	
REVENUE DATA ($M)									
CPU Revenue	19	36	54	82	96	113	129	149	23
Terminal Revenue	0	0	0	0	0	0	0	0	-46
Peripheral Revenue	1	6	5	8	9	9	10	10	16
Hardware Revenue	20	42	59	90	104	122	139	160	22
Year-to-Year Increase (%)	-3	111	42	52	16	17	14	15	
Software Revenue	14	29	41	66	75	85	96	108	21
Year-to-Year Increase (%)	14	102	43	61	15	13	13	13	
Software Service	4	9	12	18	20	22	24	27	18
Hardware Service	4	8	14	19	21	23	26	29	17
Service Revenue	8	17	25	37	41	46	50	56	17
Year-to-Year Increase (%)	19	129	45	45	11	11	10	11	
Total Factory Revenue	41	88	125	193	220	252	285	323	21
Year-to-Year Increase (%)	6	111	43	53	14	14	13	14	

NA = Not applicable
Source: Dataquest (October 1995)

Table B-35
CAD/CAM/CAE/GIS Software History and Forecast
Detail Rest of Asia Forecast, Electronic Design Automation, All Operating Systems

	1992	1993	1994	1995	1996	1997	1998	1999	CAGR (%) 1994-1999
HARDWARE SHIPMENT DATA									
Shipments									
CPUs	1,035	1,492	1,506	1,100	1,400	1,600	2,100	3,000	15
Seats	1,041	1,494	1,504	1,100	1,400	1,600	2,100	3,000	15
Year-to-Year Increase (%)	-43	44	1	-24	19	21	30	41	
Installed Base									
CPUs	4,647	5,630	6,303	6,500	6,600	6,600	7,300	8,700	7
Seats	4,783	5,748	6,385	6,500	6,600	6,600	7,300	8,700	6
Year-to-Year Increase (%)	20	20	11	2	1	0	10	20	
REVENUE DATA ($M)									
CPU Revenue	12	13	11	12	13	16	20	29	21
Terminal Revenue	0	0	0	-	-	-	-	-	NA
Peripheral Revenue	0	0	0	0	0	0	0	0	108
Hardware Revenue	13	13	11	12	13	16	20	29	21
Year-to-Year Increase (%)	-25	6	-15	3	14	18	27	47	
Software Revenue	9	9	9	9	10	12	15	23	22
Year-to-Year Increase (%)	-17	8	-9	4	14	18	29	50	
Software Service	5	5	5	6	6	7	8	9	12
Hardware Service	3	3	2	2	3	3	3	4	15
Service Revenue	9	8	7	8	9	10	11	13	13
Year-to-Year Increase (%)	5	-7	-11	18	8	8	13	19	
Total Factory Revenue	30	31	27	29	32	37	46	65	19
Year-to-Year Increase (%)	-16	3	-12	7	12	15	24	41	

NA = Not applicable
Source: Dataquest (October 1995)

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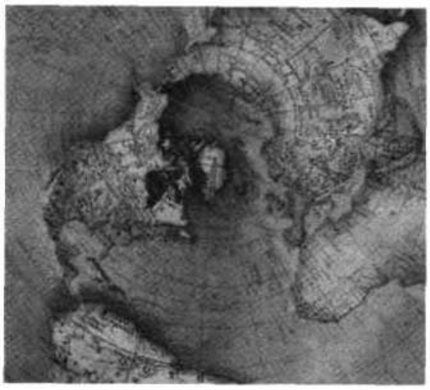

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1994 CAD/CAM/CAE/GIS Asia Market Share Update

Market Statistics

Program: CAD/CAM/CAE/GIS Asia/Pacific
Product Code: CCAM-AP-MS-9502
Publication Date: September 25, 1995
Filing: Market Analysis

1994 CAD/CAM/CAE/GIS Asia Market Share Update

Market Statistics

Program: CAD/CAM/CAE/GIS Asia/Pacific
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Note: All tables show estimated data.

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Note: All tables show estimated data.

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Note: All tables show estimated data.

1994 CAD/CAM/CAE/GIS Asia Market Share Update

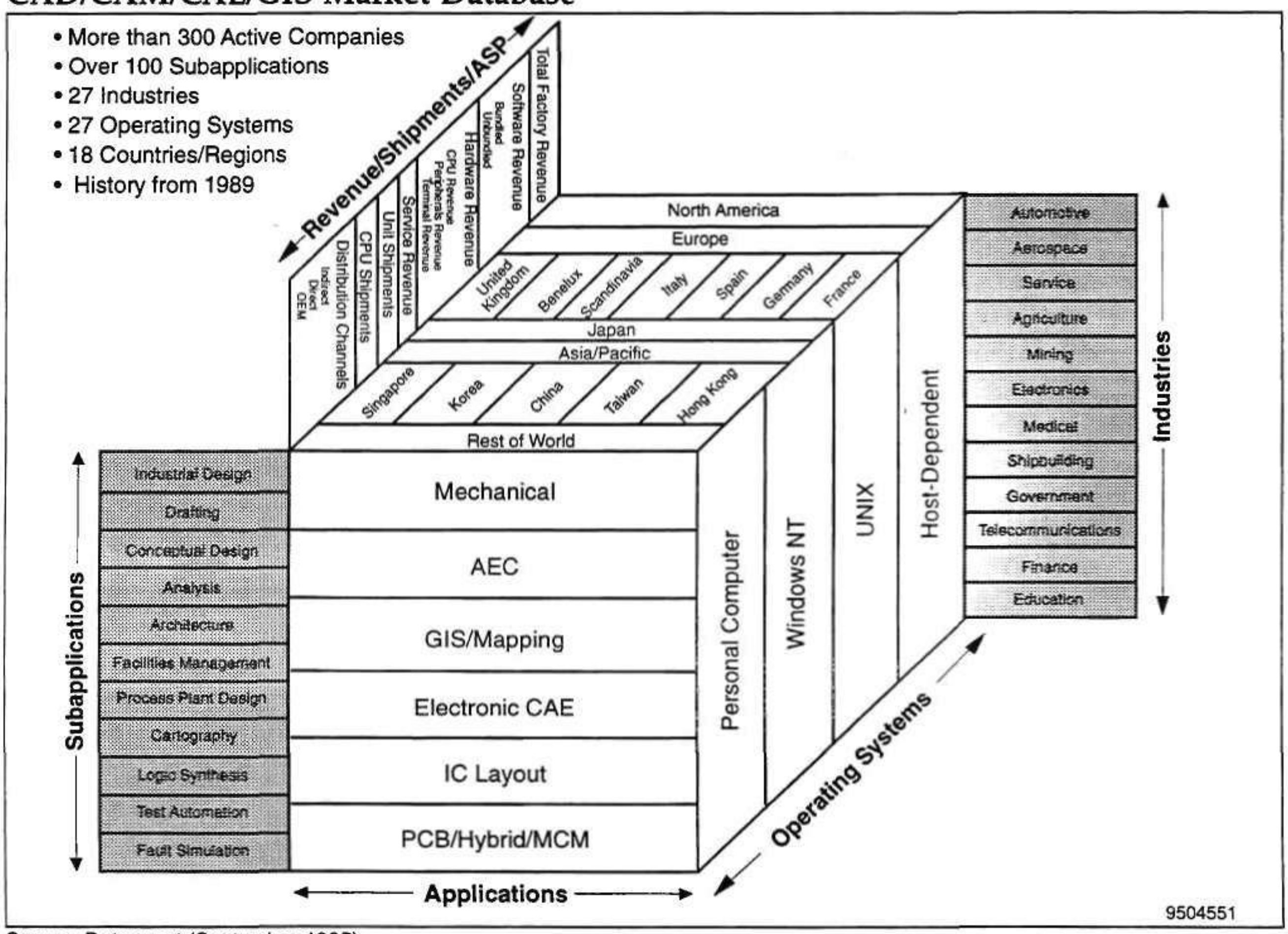
Introduction

CAD/CAM/CAE/GIS systems have dramatically changed the methods by which designers and production managers originate and implement products. CAD and CAE systems allow designers to create, draft, analyze, test, and manipulate products on a screen in two and three dimensions. As CAD/CAM/CAE/GIS systems continue to decrease in cost, they become more available and cost-justifiable to new users.

In order to provide a comprehensive view of the CAD/CAM/CAE/GIS industry, Dataquest's CAD/CAM/CAE/GIS group maintains a large database of industry information. The type of information contained in the database is depicted in Figure 1.

Table 1 summarizes the performance in various segments of the CAD/CAM/CAE/GIS markets in 1994 versus 1993.

Figure 1
CAD/CAM/CAE/GIS Market Database



Source: Dataquest (September 1995)

Table 1
CAD/CAM/CAE/GIS Market Summary, 1993 to 1994

	Software Revenue 1993	Software Revenue 1994	1993-1994 Growth (%)	Total Factory Revenue 1993	Total Factory Revenue 1994	1993-1994 Growth (%)	Seat Shipments 1993	Seat Shipments 1994	1993-1994 Growth (%)
Applications									
Mechanical	2,248.9	2,455.5	9.2	7,374.9	7,968.8	8.1	279,480	298,442	6.8
AEC	752.3	849.0	12.9	2,204.7	2,401.1	8.9	198,114	211,550	6.8
GIS/Mapping	793.1	917.2	15.7	2,129.2	2,420.9	13.7	88,672	108,107	21.9
Electronic CAE	803.3	886.3	10.3	2,297.0	2,482.2	8.1	94,651	108,019	14.1
IC Layout	180.8	216.9	20.0	601.0	721.7	20.1	10,911	12,740	16.8
PCB/MCM/Hybrid	244.0	252.1	3.3	789.8	788.3	-0.2	29,042	27,766	-4.4
Electronic Design Automation	1,228.0	1,355.2	10.4	3,687.8	3,992.2	8.3	134,604	148,525	10.3
All Applications	5,022.3	5,577.0	11.0	15,396.6	16,782.9	9.0	700,869	766,623	9.4
Region									
North America	1,856.7	2,045.6	10.2	5,614.9	6,189.1	10.2	312,240	343,290	9.9
Europe	1,660.3	1,864.4	12.3	5,272.8	5,750.2	9.1	237,945	258,480	8.6
Japan	1,203.4	1,315.8	9.3	3,728.1	3,909.9	4.9	99,963	102,239	2.3
Asia/Pacific	208.0	255.4	22.8	538.2	676.9	25.8	33,753	44,643	32.3
Rest of World	93.9	95.8	2.0	242.6	256.9	5.9	16,968	17,971	5.9
Worldwide	5,022.3	5,577.0	11.0	15,396.6	16,782.9	9.0	700,869	766,623	9.4
Operating System									
UNIX	3,466.6	3,874.3	11.8	10,861.7	11,946.9	10.0	192,244	221,152	15.0
Host	301.4	197.9	-34.3	1,616.0	1,269.4	-21.5	27,091	21,566	-20.4
Windows NT	5.5	106.4	1,845.3	10.3	282.7	2,644.1	226	6,764	2,892.9
PC	1,248.9	1,398.3	12.0	2,908.5	3,283.9	12.9	481,308	517,141	7.4
All Operating Systems	5,022.3	5,577.0	11.0	15,396.6	16,782.9	9.0	700,869	766,623	9.4

Note: This table includes software content (data) companies for GIS/mapping. However, the AEC and GIS market share book (*1994 CAD/CAM/CAE/GIS AEC and GIS Market Share*, CAEC-WW-MS-9501) does not.
Source: Dataquest (September 1995)

About This Document

This document contains Dataquest's detailed market share information on the CAD/CAM/CAE/GIS industry. The following list contains descriptions of the companies included in the Market Share books. See Tables 2, 3, 4, and 5 for changes from our 1993 report.

- Mechanical applications—All companies in database with mechanical revenue
- GIS and AEC applications—All companies in database with GIS revenue and all companies in database with AEC revenue. We also have added GIS data companies.
- Electronic design automation applications—All companies in database with EDA (electronic CAE, IC layout, PCB/hybrid/MCM) revenue
- Europe overview—All companies with European revenue
- Asia—All companies with Asian revenue

We no longer publish top-level market statistics for the entire CAD/CAM/CAE/GIS industry. This data is available by calling Suzanne Snygg at (408) 468-8124. More detailed data on these markets may be requested through our client inquiry service.

We no longer publish data by hardware platform; instead we report by four major operating systems: UNIX, host, Windows NT, and PC.

This document represents our final estimates of 1994 shipments and revenue.

Dataquest's policy is to continually update its market information, for current and past years, with any new data received in order to arrive at the most accurate market representation possible.

Table 2
Companies Renamed Since 1993

Original Company Name	New Company Name
ACDS Graphic System	Geomax International
Genrad	VEDA
GeoVision	SHL Systemhouse
Graphisoft Software Dev	Graphisoft Group
ICAD	Concentra
Kohns & Poppenhaeger	Poppenhaeger Grips GmbH
Microway	M.O.C.
Scientific & Engineering Software	SES Inc.
Silvar-Lisco	SVRI (Silicon Valley Research Inc.)
Smallworld Systems	SmallworldWide
Swanson Analysis	Ansys
Tactics International	Tactician Corporation

Source: Dataquest (September 1995)

Table 3
Companies (or CAD Portions of Companies) Sold/Merged in 1994

Company Name	Acquired by/Merged with
Aries Technology	MacNeal-Schwendler
ANACAD-EES	Mentor Graphics
Betronex & Visionics	NorInvest Ltd.
Cisigraph	Matra
Digital—Mechanical Software	PROCAD GmbH
Chronological Simulation	Viewlogic
Computervision—GIS	Unisys
Control Data—Mechanical Software	ICEM Technologies
Foresight Resources	Softdesk
Generation 5 Technology	Geo/SQL Corporation
Gerber Systems (CAD portion)	Matra
Kork Systems	Autometric
LandCadd	Eagle Point
Logic Modeling Corp.	Synopsys
Massteck	OrCAD
Model Technology	Mentor Graphics
NeoCAD	Xilinx
PDA Engineering	MacNeal-Schwendler
Point Control	CAMAX Manufacturing
Racal-Redac	Zuken-Redac
Sunrise	Viewlogic
Syscan	Sysdeco Innovation

Source: Dataquest (September 1995)

Table 4
Companies Deleted from Database Since 1993

Region/Company	
North American	European
A.I. Systems	Aplein*
Apple Computer	Aucos elektronische
Aura CAD/CAM Systems	BATISOFT
CAE-link	CAD-Capture
Claris	CAD TECH Iberica*
Compact Software	CAMTEK
Control Data—Hardware	Caroline Informatique
Data General	Contract Data Research
ECOM Associates	Data Technology/DATECH*
Georgia Tech Research	Datagraphic
GEOVISION Inc.	DELTA CAD*
Infinite Graphics	EME

(Continued)

Table 4
Companies Deleted from Database Since 1993 (Continued)

Region/Company	
North American (Continued)	European (Continued)
Innovative Data Design	FEA
Intrinsix	FEGS
Land Innovation	ItalCad
Maptech	Kreon
MC2 Engineering Software	Lamp Software
Moda CAD	Logic Systems Designers*
Phase Three Logic	Macao Systems
Synercom	MEDESIGN
Teradyne	Mucke Software
Understanding Systems	S.T.L.D.s.r.l.
Asian	Soft*
Kanematsu Semiconductor*	

*Distributors
Source: Dataquest (September 1995)

Table 5
Companies Added to Database Since 1993

Region/Company	
North American	European
3Soft	Abstract Hardware
Access Corp.	ACA Ltd.
ArcSys	Cimtel Ltd.
B.A. Intelligence Networks	Eigner + Partner GmbH
Boothroyd Dewhurst	HoSoft CAD
Cadis Software	Speed
CGTech	Spot Image Corp.
Chronology	ULTimate Technology
Cimplex	WiN Technology
Claritas/NPDC	
CMstat	
CSAR Corp.	
Database Applications Inc.	
Deneb Robotics	
DB Technology	
Design Acceleration	
Eagle Point	
EOSAT	
Equifax/NDS	
Fintronic	
Formtek	
Geographic Data Technology	
Gibbs and Assoc.	

(Continued)

Table 5
Companies Added to Database Since 1993 (Continued)

Region/Company
North American (Continued)
Integrity Engineering
InterHDL
Intusoft
Livermore Software Tech. Corp.
Nextwave DA
NOVASOFT Systems
OEA International
Optem Engineering
Rebis (merger of EDA and ADev)
Sherpa Corp.
Simulation Technology
SRAC
Surfware
T D Technology
Tecnomatics Tech.
UniCAD
Variation Systems Analysis
Veritools
VISTA Environmental Inf.
Workgroup Tech

*Distributors
Source: Dataquest (September 1995)

Segmentation Definitions

This section lists the definitions specific to this document. The following paragraphs define the segments.

Applications

Mechanical

The mechanical segment refers to computer-aided tools used by engineers, designers, analysts, technicians, and draftspeople working predominantly in the discrete manufacturing industries, but includes government and education. Users of mechanical CAD/CAM/CAE tools work in all departments across the typical organization, with a majority found in product design, advanced engineering, and manufacturing engineering. Common design applications include conceptual design, industrial design, structural or thermal analysis, detail design, and electromechanical design (the mechanical part of design with electrical or electronic components and mechanisms). Common manufacturing applications include tool and fixture design, numerical control part programming, offline robotics programming, and interface to quality control systems. Management tools for database control and distribution are included in this segment, as well as user-defined application programming.

Architecture, Engineering, and Construction (AEC)

The AEC segment covers the use of computer-aided tools by architects, contractors, plant engineers, civil engineers, and other people associated with these disciplines to aid in designing and managing buildings, industrial plants, ships, and other types of nondiscrete entities.

Geographic Information Systems (GIS)/Mapping

GIS is computer-based technology, and the segment comprises hardware, software, and data used to capture, edit, display, and analyze spatial (tagged by location) information.

Electronic Design Automation (EDA)

The EDA segment covers computer-based tools used to automate the design of an electronic product, including printed circuit boards, ICs, and systems. EDA includes ECAE, IC layout, and PCB/hybrid/MCM, as follows:

- Electronic computer-aided engineering (ECAE)—These are computer-aided tools used in the engineering or design phase of electronic products (as opposed to the physical layout phase of the product). Examples of electronic CAE applications are schematic capture and simulation.
- IC layout—This is a software application tool used to create and validate the physical implementation of an IC. The IC layout category comprises polygon editors, symbolic editors, placement and routing (gate array, cell, and block), and design verification tools (DRC/ERC/logic-to-layout).
- PCB/hybrid/MCM—This segment covers products used to create the placement and routing of the traces and components laid out on a printed circuit board. Also included in this category are thermal analysis tools.

Regions

The following paragraphs define the regions.

North America

North America includes the United States, Mexico, and Canada.

Europe

Europe includes the United Kingdom, Scandinavia, Benelux, France, Germany, Italy, Spain, and Rest of Europe.

Japan

Asia/Pacific

Asia includes Singapore, Taiwan, Korea, China, and Hong Kong.

Rest of World

Rest of World includes all other countries including Australia, New Zealand, India, Africa, Central America, South America, and the Middle East.

Operating Systems

Dataquest defines the operating systems as follows:

- UNIX: UNIX includes all UNIX variants and older workstation operating systems.
- Host: Host includes minicomputer and mainframe operating systems in which the functions of external workstations are dependent on a host computer.
- Windows NT: Windows NT is the Microsoft operating system. We understand that code for Windows NT and Windows will be merged within the next three years. The probability is high that Microsoft will develop a client environment and a server environment. In our forecast, the future client environment is included in PC operating systems, and the future server environment is referenced as NT. Also included in NT is potential for an additional, new, high-end operating environment that could be developed by any vendor.
- PC: PC includes DOS, Windows, Windows 95, and Apple operating systems.

Metrics

The following paragraphs define measurements:

- Total factory revenue is defined as the amount of money received by a manufacturer for its goods and services measured in U.S. dollars. Total factory revenue does not include revenue that a company may receive from products that are sold to another company for resale (OEM revenue). Total factory revenue is the sum of software revenue, hardware revenue, and service revenue.
- Unit shipment is defined as the number of seats delivered (number of possible simultaneous users of product delivered) excluding OEM shipments.
- Hardware revenue is revenue derived from sales of CPUs (including operating systems), terminals (for host-dependent systems), and peripherals.
- Software revenue is revenue derived from the sale of application software that exists on a company's standard price list.
- Service revenue is defined as all revenue derived from the service and support of CAD/CAM/CAE/GIS systems. Service revenue can be calculated in the tables by subtracting hardware and software revenue from total revenue. A split by hardware service and software service is available through inquiry.
    - Maintenance fees for hardware and software
    - Management and operations services—help desk, education and training, disaster recovery, vaulting, and configuration management

- Service bureau—project work, including construction of database, data conversion, product design, analysis, or manufacturing
- Application development—design and development of customized software applications or the modification, enhancement of customization of existing software applications, adding new functionality
- Consulting revenue—assessment of CAD/CAM/CAE/GIS business and information technology needs and the formulation of a plan based on needs identification
- Implementation and integration services—planning, implementation, migration, and integration of software products (software network support and integration, account integration management, data center design, and construction)

Market Share Methodology

Dataquest uses both primary and secondary sources to produce our market share data. In the fourth quarter of each year and second quarter of the subsequent year, we survey all participants in each industry. Each vendor is offered the opportunity to self-report the information required. Although there is a primary contact for each company, large companies are surveyed across product lines and across geographic regions. Thus there is a corresponding increase in the number of contacts at large companies. (Dataquest maintains a large contact database on all sources of information.) Examples of the job titles of people contacted for information are the following:

- President and CEO
- Vice president and general manager
- Vice president of marketing
- Vice president, strategic product planning
- Director of strategic planning
- Director of marketing
- Director of market development
- Manager, CAD/CAM/CAE/GIS marketing programs
- Market research analyst

The Audit Process

Data supplied by vendors is evaluated against information drawn from many sources, including the following:

- Revenue published by major industry participants
- Estimates made by knowledgeable and reliable industry spokespersons
- Government data or trade association data

- Published product literature and price lists
- Interviews with knowledgeable manufacturers, distributors, and users
- Relevant economic data
- Information and data from online data banks
- Articles in both the general and trade press
- Annual reports, SEC documents, credit reports
- Company publications and press releases
- Reports from financial analysts
- User studies
- Reseller and supplier reports and reports from a vendor's competitors

Dataquest also sums vendor revenue across other industries covered by Dataquest to make sure that revenue is not credited twice, and checks with multiple sources at one company to cross-check data on that company.

Dataquest analysts have many years of experience in how to apply the tools described to get the most accurate information possible on a particular company (such as what to use when and what industry averages are). We believe that the estimates presented here are the most accurate and meaningful generally available today. It is the CAD/CAM/CAE/GIS group's policy to continually update our market information for any year, based on any new data received, in order to arrive at the most accurate market representation possible.

Dataquest's CAD/CAM/CAE/GIS market numbers are often higher than those reported by other sources. We survey worldwide, which involves more vendors, higher total market revenue, lower market share per vendor, and a more accurate market picture—which is particularly useful when comparing regions or applications.

Publishing Schedule

We publish market share and forecasting twice each year for each, allowing for both timely distribution of data and thorough analysis and forecasting. Our annual delivery schedule is as follows:

- Market share will be published and distributed to clients by March 31.
- Forecasting from the market share tables provides a five-year forecast period, available after April 30. The books will be shipped by May 31.
- Final updated market share tables, based on additional data collection and analysis, will be completed by June 30. At this point, the market share database is frozen and will not be changed until the end of the year. For the next six months, supplementary market data will be based on this final market data. Books will be shipped by July 31. (Unfortunately, because of our database changes, updated market share table delivery was delayed beyond this date.)

- We provide complete final forecast tables by July 31. These tables take into consideration changes in the market share during the previous six months. Books will be shipped by September 31.

Table A-1
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Japan Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Fujitsu*	114.3	161.5	181.9	12.6	13.8
2	IBM	114.3	128.9	114.7	-11.0	8.7
3	NEC	84.5	96.4	103.4	7.3	7.9
4	Hitachi	73.1	80.8	86.9	7.5	6.6
5	Toshiba*	66.4	72.0	78.1	8.6	5.9
6	Altium*	65.5	68.0	76.9	13.1	5.8
7	Nihon Unisys	44.2	62.9	69.9	11.1	5.3
8	C. Itoh Techno-Science*	24.4	52.5	59.0	12.5	4.5
9	Info. Services Int'l. Dentsu*	40.2	50.5	58.4	15.7	4.4
10	Zuken-Redac	51.7	48.1	50.0	4.0	3.8
11	Cadence	61.3	39.7	46.9	18.2	3.6
12	Marubeni Hytech*	36.7	39.7	44.0	10.8	3.3
13	Synopsys	9.5	20.2	38.5	90.4	2.9
14	Seiko*	44.0	36.8	37.3	1.4	2.8
15	INS Engineering	7.3	29.8	37.3	25.2	2.8
16	Hitachi Zosen Info Systems	37.0	41.0	36.0	-12.2	2.7
17	Autodesk	52.3	31.1	33.5	7.8	2.5
18	Sharp*	23.9	27.9	32.5	16.4	2.5
19	Hewlett-Packard	15.0	29.8	32.0	7.5	2.4
20	SDRC	28.3	26.7	29.5	10.5	2.2
21	Andor*	29.5	26.6	28.7	8.1	2.2
22	Mentor Graphics	23.3	25.7	27.4	6.5	2.1
23	Parametric Technology	10.6	14.0	26.6	90.7	2.0
24	Kozo Keikaku Engineering*	16.7	22.6	24.6	8.9	1.9
25	Hakuto*	16.5	21.2	23.6	11.2	1.8
26	Computervision	23.7	27.0	23.2	-14.0	1.8
27	Mutoh Industries*	53.9	41.0	21.9	-46.6	1.7
28	Sumisho Electronics*	4.9	19.7	21.9	11.0	1.7
29	CADIX	17.6	20.3	21.8	7.2	1.7
30	Yokogawa Digital Computer	11.9	17.5	20.8	18.7	1.6
	All N.A. Companies	470.5	509.5	565.9	11.1	43.0
	All European Companies	14.9	18.3	17.9	-2.0	1.4
	All Asian Companies	631.5	675.5	731.9	8.3	55.6
	All Companies	1,116.9	1,203.3	1,315.7	9.3	100.0

* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-2
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Japan Software Companies, Mechanical, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	97.9	108.7	92.3	-15.0	13.7
2	Fujitsu*	46.9	74.3	83.7	12.6	12.4
3	Hitachi	54.8	61.8	66.4	7.5	9.8
4	NEC	50.4	54.3	61.7	13.7	9.1
5	Altium*	54.7	56.3	60.8	8.0	9.0
6	Info. Services Int'l. Dentsu*	40.2	50.5	58.4	15.7	8.6
7	Toshiba*	46.5	50.4	54.5	8.2	8.1
8	Nihon Unisys	38.0	51.5	48.1	-6.5	7.1
9	C. Itoh Techno-Science*	19.7	30.4	34.6	13.6	5.1
10	Hitachi Zosen Info Systems	33.7	38.3	34.2	-10.7	5.1
11	SDRC	28.3	26.7	29.5	10.5	4.4
12	Parametric Technology	10.6	14.0	26.6	90.7	3.9
13	Sharp*	14.3	22.3	26.3	17.7	3.9
14	Hakuto*	16.5	21.2	23.6	11.2	3.5
15	Computervision	21.7	23.5	22.4	-4.6	3.3
16	Hewlett-Packard	14.6	19.8	22.4	12.6	3.3
17	Sumisho Electronics*	3.8	16.8	18.4	9.6	2.7
18	Marubeni Hytech*	16.3	15.1	18.3	21.5	2.7
19	Seiko*	19.0	17.4	18.0	3.7	2.7
20	Andor*	19.0	17.1	17.6	2.6	2.6
21	Tokyo Electron*	17.6	14.0	16.0	14.5	2.4
22	Mutoh Industries*	40.9	26.8	14.2	-47.2	2.1
23	Dassault*	21.6	12.0	13.9	15.6	2.1
24	Mitsui Engineering	5.3	16.7	12.9	-22.9	1.9
25	Ricoh*	4.4	9.4	11.6	23.5	1.7
26	MacNeal-Schwendler	14.6	17.2	11.0	-35.9	1.6
27	Toshiba Engineering*	9.8	9.9	10.9	10.8	1.6
28	Autodesk	20.9	12.4	10.8	-13.3	1.6
29	MARC	6.4	8.2	9.6	18.0	1.4
30	Graphtec Engineering	6.9	7.0	7.9	12.4	1.2
	All N.A. Companies	242.2	263.2	261.4	-0.7	38.7
	All European Companies	9.1	8.9	11.0	23.6	1.6
	All Asian Companies	352.4	379.8	403.4	6.2	59.7
	All Companies	603.7	652.0	675.8	3.7	100.0

* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-3
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Japan Software Companies, AEC, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Fujitsu*	35.4	46.8	52.8	12.6	32.4
2	Nihon Unisys	6.2	11.5	21.8	90.0	13.4
3	INS Engineering	3.6	14.9	18.7	25.2	11.5
4	NEC	13.4	17.1	17.0	-0.5	10.4
5	Autodesk	22.5	13.4	14.4	7.9	8.9
6	IBM	10.3	13.3	13.1	-2.1	8.0
7	C. Itoh Techno-Science*	2.2	11.0	12.2	10.4	7.5
8	CPU	7.1	9.6	11.0	14.1	6.8
9	Kozo Keikaku Engineering*	11.5	9.0	9.8	8.9	6.0
10	Toshiba*	8.0	8.6	9.5	10.5	5.9
11	Andor*	8.2	7.4	8.9	20.0	5.5
12	Hitachi	7.3	7.9	8.6	8.9	5.3
13	Altium*	5.4	5.8	7.8	34.7	4.8
14	Mutoh Industries*	9.7	12.3	6.6	-46.4	4.0
15	Intergraph	4.5	4.5	6.3	38.2	3.9
16	Informatix*	2.5	3.0	5.2	75.7	3.2
17	GDS	2.4	6.2	4.4	-29.9	2.7
18	Century Research Center	4.0	3.7	4.2	12.2	2.5
19	Kanematsu Computer Systems*	4.3	6.2	3.6	-41.7	2.2
20	Aspen Technology	1.1	2.4	2.3	-1.0	1.4
21	Mitsubishi Electric*	1.9	2.2	2.3	3.2	1.4
22	Sumisho Electronics*	0.8	1.8	2.2	22.9	1.4
23	Uchida Yoko	1.9	1.9	2.1	11.5	1.3
24	Kockums Computer Systems	0.7	1.7	1.9	10.5	1.2
25	Technodia*	0.2	2.9	1.8	-36.6	1.1
26	Design Automation	1.9	1.5	1.8	18.4	1.1
27	Hitachi Zosen Info Systems	3.3	2.7	1.8	-32.7	1.1
28	CAD Centre	0.8	1.3	1.7	37.3	1.1
29	Toyo Information Systems*	1.2	1.4	1.6	9.0	1.0
30	ACA Ltd.	1.3	1.4	1.5	4.6	0.9
	All N.A. Companies	44.6	45.3	44.2	-2.5	27.1
	All European Companies	3.6	4.9	5.5	13.1	3.4
	All Asian Companies	75.8	95.2	113.2	18.9	69.5
	All Companies	123.9	145.4	162.9	12.1	100.0

* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-4
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Japan Software Companies, GIS/Mapping, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Fujitsu*	12.6	19.4	21.8	12.6	22.5
2	INS Engineering	3.7	14.9	18.7	25.2	19.3
3	GDS	5.6	6.2	10.5	68.9	10.9
4	Uchida Yoko	7.9	8.2	9.2	11.4	9.4
5	Hitachi	7.3	8.1	8.8	8.5	9.1
6	Toshiba*	6.6	7.2	8.1	12.1	8.3
7	Kozo Keikaku Engineering*	-	6.8	7.4	8.9	7.6
8	Landmark Graphics	3.5	6.1	7.0	14.8	7.2
9	Pasco*	4.9	5.5	6.3	13.6	6.5
10	Mitsubishi Electric*	5.4	6.1	5.5	-10.5	5.6
11	Intergraph	5.3	4.3	4.8	11.2	4.9
12	ESRI	5.2	3.1	3.9	28.7	4.1
13	Autodesk	5.8	3.4	3.7	8.8	3.8
14	Mitsui Engineering	3.5	3.0	3.3	10.8	3.5
15	NEC	2.0	2.3	2.3	1.6	2.4
16	CADIX	1.8	2.0	2.3	12.3	2.4
17	C. Itoh Techno-Science*	-	1.8	2.2	18.0	2.2
18	Century Research Center	1.8	1.8	2.0	11.9	2.0
19	MapInfo	-	0.9	1.6	81.4	1.7
20	Genasys II	1.0	1.2	1.5	26.8	1.6
21	Andor*	1.4	1.3	1.3	2.4	1.3
22	Mutoh Industries*	3.2	1.9	1.1	-39.9	1.2
23	IBM	0.7	0.9	1.0	3.1	1.0
24	Earth Resource Mapping	0.5	0.4	0.6	41.0	0.6
25	PCI Remote Sensing Corp	-	0.3	0.5	74.6	0.5
26	ERDAS	0.4	0.2	0.4	70.0	0.4
27	Laser-Scan	0.2	0.2	0.3	22.4	0.3
28	Sysdeco Innovation	-	0.2	0.2	20.4	0.2
29	Dynamic Graphics	0.2	0.1	0.2	32.1	0.2
30	Terr-Mar Resource Info Svs	0.2	0.2	0.2	-3.4	0.2
	All N.A. Companies	32.1	28.9	36.1	25.0	37.3
	All European Companies	0.2	0.4	0.5	15.3	0.5
	All Asian Companies	39.6	52.2	60.3	15.5	62.2
	All Companies	72.0	81.5	96.9	18.9	100.0

* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-5
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Japan Software Companies, Electronic Design Automation,
All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Zuken-Redac	51.3	47.6	49.2	3.3	12.9
2	Cadence	61.3	39.7	46.9	18.2	12.3
3	Synopsys	9.5	20.2	38.5	90.4	10.1
4	Mentor Graphics	23.3	25.7	27.4	6.5	7.2
5	Marubeni Hytech*	20.4	24.7	25.7	4.3	6.8
6	Fujitsu*	19.4	21.0	23.7	12.6	6.2
7	NEC	18.7	22.7	22.4	-1.5	5.9
8	Yokogawa Digital Computer	11.9	17.5	20.6	17.5	5.4
9	Seiko*	25.0	19.4	19.3	-0.6	5.1
10	CADIX	12.3	14.2	14.9	5.0	3.9
11	OKURA*	6.3	10.8	14.3	32.7	3.8
12	Wacom	23.3	13.2	12.1	-8.0	3.2
13	C. Itoh Techno-Science*	2.4	9.2	10.1	10.2	2.7
14	Hewlett-Packard	0.4	9.9	9.6	-2.9	2.5
15	COMPASS Design Automation	6.6	9.0	9.5	4.7	2.5
16	Viewlogic Systems	4.0	10.3	9.3	-8.9	2.5
17	Quickturn Design Systems	2.9	5.4	8.9	62.6	2.3
18	IBM	5.4	6.0	8.3	39.7	2.2
19	Altium*	5.4	6.0	8.3	39.7	2.2
20	Sharp*	9.6	5.6	6.2	11.1	1.6
21	Toshiba*	5.3	5.8	6.1	5.0	1.6
22	CrossCheck Technology	1.8	4.1	5.2	26.5	1.4
23	Summitt Design	2.5	2.8	5.2	86.5	1.4
24	Harris EDA	3.9	4.1	4.7	14.5	1.2
25	Autodesk	3.1	1.9	4.6	145.8	1.2
26	Meta-Software	2.3	2.3	4.3	82.4	1.1
27	Sophia Systems*	5.3	3.9	4.1	5.4	1.1
28	Cascade Design Automation	2.6	2.7	3.6	31.5	0.9
29	Hitachi	3.7	3.1	3.1	2.6	0.8
30	ALTERA	1.1	2.0	3.0	52.6	0.8
	All N.A. Companies	151.6	172.0	224.2	30.3	59.0
	All European Companies	2.0	4.1	0.9	-77.6	0.2
	All Asian Companies	163.7	148.4	155.0	4.5	40.8
	All Companies	317.3	324.5	380.1	17.1	100.0

* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-6
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Japan Software Companies, Electronic CAE, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Synopsys	9.5	20.2	38.5	90.4	20.3
2	Marubeni Hytech*	19.7	23.5	24.3	3.2	12.8
3	Cadence	31.7	18.4	21.5	16.9	11.3
4	Mentor Graphics	14.8	16.7	14.9	-10.7	7.9
5	NEC	11.7	12.9	13.9	7.3	7.3
6	Zuken-Redac	13.8	10.9	10.7	-2.4	5.6
7	Wacom	23.3	11.8	10.6	-10.6	5.6
8	Hewlett-Packard	0.4	9.9	9.6	-2.9	5.1
9	Seiko*	7.7	9.8	9.4	-4.8	4.9
10	Viewlogic Systems	4.0	10.3	9.3	-8.9	4.9
11	Quickturn Design Systems	2.9	5.4	8.9	62.6	4.7
12	C. Itoh Techno-Science*	1.6	5.7	6.2	9.5	3.3
13	CrossCheck Technology	1.8	4.1	5.2	26.5	2.7
14	Autodesk	3.1	1.9	4.6	145.8	2.4
15	Meta-Software	2.3	2.3	4.3	82.4	2.2
16	Fujitsu*	8.0	3.2	3.6	12.6	1.9
17	COMPASS Design Automation	2.9	3.8	3.2	-16.2	1.7
18	Sophia Systems*	4.5	3.1	3.2	2.6	1.7
19	ALTERA	1.1	2.0	3.0	52.6	1.6
20	EPIC Design Technology	0.6	1.2	2.6	118.2	1.4
21	Summitt Design	1.0	1.5	2.5	65.8	1.3
22	IKOS Systems	1.3	1.4	2.0	41.5	1.1
23	Microsim	0.3	0.3	2.0	571.2	1.0
24	Zycad	3.8	1.6	1.6	-3.0	0.8
25	Harris EDA	1.3	1.3	1.5	14.3	0.8
26	Contec Microelectronics	1.0	1.3	1.5	10.0	0.8
27	LSI Logic	0.9	1.2	1.4	17.5	0.7
28	Intergraph	0.8	1.5	1.3	-11.4	0.7
29	Analogy	0.8	1.0	1.2	20.0	0.7
30	APTIX	0.1	0.7	1.2	78.7	0.6
	All N.A. Companies	91.5	114.6	151.9	32.5	80.0
	All European Companies	0.4	1.5	0.7	-53.3	0.4
	All Asian Companies	51.9	37.1	37.2	0.2	19.6
	All Companies	143.8	153.2	189.8	23.8	100.0

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-7
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Japan Software Companies, IC Layout, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	25.3	17.2	21.0	22.1	34.6
2	OKURA*	6.3	10.8	14.3	32.7	23.5
3	Seiko*	17.3	9.6	9.9	3.7	16.3
4	Mentor Graphics	5.6	6.4	9.2	42.8	15.1
5	COMPASS Design Automation	3.7	5.2	6.3	19.8	10.3
6	Fujitsu*	3.4	4.8	5.5	12.6	9.0
7	Cascade Design Automation	2.0	2.0	2.8	35.8	4.5
8	Summitt Design	1.5	1.2	2.6	111.8	4.3
9	TSSI Japan*	1.6	1.6	2.2	32.7	3.5
10	Silicon Valley Research	2.9	1.8	2.0	10.3	3.3
11	ARCSYS	-	0.5	1.5	208.9	2.4
12	Marubeni Hytech*	0.7	1.2	1.5	26.1	2.4
13	Integrated Silicon Systems	0.5	0.7	1.3	78.5	2.1
14	NEOCAD	0.3	0.9	1.2	31.0	1.9
15	High Level Design Systems	-	0.5	0.6	22.6	0.9
16	Intergraph	1.2	0.6	0.6	-6.6	0.9
17	LSI Logic	0.1	0.1	0.2	30.4	0.3
18	Tanner Research	-	-	0.1	NA	0.1
19	AT & T	-	-	0	NA	0
20	NEC	1.0	1.2	-	-100.0	-
	All N.A. Companies	43.1	37.3	49.3	32.1	81.0
	All European Companies	-	-	-	NA	-
	All Asian Companies	19.3	12.1	11.6	-4.4	19.0
	All Companies	62.4	49.4	60.8	23.1	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-8
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Japan Software Companies, PCB/MCM/Hybrid, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Zuken-Redac	37.5	36.7	38.5	4.9	29.7
2	Yokogawa Digital Computer	11.9	17.5	20.1	15.0	15.5
3	CADIX	12.3	14.2	14.9	5.0	11.5
4	Fujitsu*	8.0	12.9	14.6	12.6	11.2
5	NEC	6.0	8.6	8.5	-1.4	6.6
6	IBM	5.4	6.0	8.3	39.7	6.4
7	Altium*	5.4	6.0	8.3	39.7	6.4
8	Sharp*	9.6	5.6	6.2	11.1	4.8
9	Toshiba*	5.3	5.8	6.1	5.0	4.7
10	Cadence	4.4	4.0	4.3	7.2	3.3
11	C. Itoh Techno-Science*	-	3.5	3.9	11.4	3.0
12	Mentor Graphics	2.8	2.6	3.3	27.3	2.6
13	Harris EDA	2.6	2.8	3.2	14.6	2.5
14	Hitachi	3.7	3.1	3.1	2.6	2.4
15	Uchida Yoko	3.1	2.3	2.4	4.8	1.9
16	PADS Software	0.2	3.3	2.3	-30.7	1.8
17	Wacom	-	1.3	1.5	15.2	1.2
18	TECHSPERT*	0.4	0.6	1.5	165.9	1.1
19	Sumisho Electronics*	0.3	1.2	1.3	12.1	1.0
20	Andor*	0.9	0.8	1.0	24.7	0.7
21	Sophia Systems*	0.8	0.8	0.9	16.3	0.7
22	Omron	0.6	0.8	0.9	4.9	0.7
23	Intergraph	0.4	0.7	0.6	-21.3	0.5
24	Century Research Center	0.6	0.4	0.4	5.3	0.3
25	Accel Technologies	0.3	0.3	0.3	8.6	0.3
26	Cooper & Chyan Technology	-	0.1	0.3	345.0	0.2
27	OrCAD EDA	0.2	0.2	0.2	19.1	0.2
28	ULTImate Technology	0.4	0.4	0.1	-57.3	0.1
29	CAD-UL	-	0.1	0.1	8.8	0.1
30	AT & T	-	-	0	NA	0
	All N.A. Companies	17.0	20.0	23.0	14.7	17.7
	All European Companies	1.6	2.6	0.2	-91.7	0.2
	All Asian Companies	92.5	99.2	106.3	7.2	82.1
	All Companies	111.1	121.8	129.5	6.3	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-9
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Japan Software Companies, All Applications, UNIX

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Fujitsu*	62.9	89.1	130.8	46.8	12.6
2	NEC	53.2	70.6	76.0	7.6	7.3
3	Hitachi	52.6	61.4	68.8	12.0	6.6
4	Nihon Unisys	14.7	50.0	64.7	29.5	6.2
5	Toshiba*	46.2	55.1	61.5	11.5	5.9
6	Info. Services Int'l. Dentsu*	37.1	50.5	55.5	9.9	5.4
7	C. Itoh Techno-Science*	24.4	46.8	54.6	16.6	5.3
8	IBM	23.9	59.3	53.2	-10.4	5.1
9	Zuken-Redac	51.7	48.1	49.0	1.9	4.7
10	Cadence	60.2	39.7	46.9	18.2	4.5
11	Marubeni Hytech*	31.2	33.8	39.5	17.0	3.8
12	Synopsys	9.5	20.2	38.5	90.4	3.7
13	Seiko*	40.0	36.8	36.1	-1.9	3.5
14	Hitachi Zosen Info Systems	37.0	41.0	36.0	-12.2	3.5
15	INS Engineering	7.0	28.3	35.5	25.2	3.4
16	Sharp*	23.6	27.9	32.5	16.4	3.1
17	Hewlett-Packard	15.0	29.1	29.5	1.4	2.8
18	SDRC	27.3	26.4	29.5	11.6	2.8
19	Altium*	-	19.7	27.4	38.9	2.6
20	Mentor Graphics	23.0	25.3	26.9	6.3	2.6
21	Parametric Technology	10.6	13.3	24.0	79.7	2.3
22	Computervision	23.7	26.6	22.5	-15.6	2.2
23	CADIX	17.6	20.3	21.8	7.2	2.1
24	Yokogawa Digital Computer	11.9	17.5	20.8	18.7	2.0
25	Tokyo Electron*	17.6	14.0	16.0	14.5	1.5
26	Mitsui Engineering	8.5	19.5	15.8	-19.0	1.5
27	OKURA*	6.3	10.8	14.3	32.7	1.4
28	Hakuto*	0.8	12.7	14.1	11.2	1.4
29	Sumisho Electronics*	0.5	12.5	14.0	11.8	1.3
30	Mutoh Industries*	24.0	21.1	13.4	-36.4	1.3
	All N.A. Companies	300.5	360.9	415.4	15.1	40.0
	All European Companies	9.4	13.1	13.6	4.0	1.3
	All Asian Companies	450.3	541.8	608.5	12.3	58.6
	All Companies	760.2	915.8	1,037.6	13.3	100.0

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-10
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Japan Software Companies, All Applications, NT/Hybrid

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Intergraph	-	-	3.5	NA	51.5
2	Mutoh Industries*	-	-	3.4	NA	50.1
3	Parametric Technology	-	-	2.7	NA	39.3
4	Seiko*	-	-	1.2	NA	18.0
5	Mentor Graphics	-	-	0.2	NA	2.9
6	ESRI	-	-	0.2	NA	2.6
7	PADS Software	-	-	0.1	NA	1.5
8	Rasna Corporation	-	0.1	0.1	-18.4	1.5
9	PCI Remote Sensing Corp	-	-	0	NA	0.4
10	Intusoft	-	-	0	NA	0.2
11	SIMUCAD	-	0	0	62.0	0.1
12	InterHDL	-	-	0	NA	0
	All N.A. Companies	-	0.1	6.8	5166.7	100.0
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	-	0.1	6.8	5166.7	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-11
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Japan Software Companies, All Applications, Personal Computer

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	65.5	48.3	49.6	2.5	21.6
2	Altium*	65.5	48.3	49.6	2.5	21.6
3	Fujitsu*	17.2	60.6	37.7	-37.7	16.4
4	Autodesk	49.2	29.2	31.8	8.9	13.9
5	Andor*	29.5	26.6	28.7	8.1	12.5
6	NEC	22.3	19.6	27.4	40.1	11.9
7	Toshiba*	16.9	16.8	16.7	-1.0	7.3
8	Wacom	26.8	16.9	15.7	-6.6	6.8
9	Hitachi	13.2	13.3	13.3	0.1	5.8
10	Kozo Keikaku Engineering*	8.0	12.2	13.3	8.9	5.8
11	CPU	7.1	9.6	11.0	14.1	4.8
12	Hakuto*	15.6	8.5	9.4	11.2	4.1
13	Sumisho Electronics*	4.4	7.2	7.9	9.4	3.4
14	Design Automation	9.3	7.3	7.7	5.6	3.4
15	Mutoh Industries*	29.9	19.9	5.0	-74.6	2.2
16	Marubeni Hytech*	5.5	5.9	4.5	-24.2	2.0
17	Mitsubishi Electric*	3.5	4.0	4.2	5.5	1.8
18	Intergraph	2.0	3.8	3.9	3.0	1.7
19	Viewlogic Systems	1.1	3.8	3.6	-6.0	1.6
20	ALTERA	1.1	2.0	3.0	52.6	1.3
21	Info. Services Int'l. Dentsu*	1.0	-	2.9	NA	1.3
22	Sophia Systems*	3.7	2.7	2.8	3.7	1.2
23	Hewlett-Packard	-	0.6	2.4	285.8	1.1
24	PADS Software	-	3.2	2.2	-30.4	1.0
25	Kanematsu Computer Systems*	2.8	3.3	2.2	-34.6	0.9
26	ARGO GRAPHICS*	1.9	1.9	1.9	-1.5	0.8
27	INS Engineering	0.3	1.5	1.9	25.8	0.8
28	GDS	-	-	1.7	NA	0.7
29	Microsim	-	-	1.7	NA	0.7
30	Uchida Yoko	1.6	1.5	1.6	4.7	0.7
	All N.A. Companies	124.3	104.1	118.5	13.8	51.6
	All European Companies	3.8	4.4	4.1	-6.7	1.8
	All Asian Companies	120.0	102.5	107.2	4.6	46.7
	All Companies	248.1	211.0	229.8	8.9	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-12
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Japan Software Companies, All Applications, Host/Proprietary

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Fujitsu*	34.3	11.9	13.4	12.6	32.2
2	IBM	24.9	21.2	12.0	-43.6	28.8
3	GDS	6.1	9.2	8.0	-13.0	19.3
4	Nihon Unisys	29.6	13.0	5.2	-60.0	12.5
5	Hitachi	7.3	6.1	4.8	-21.3	11.6
6	C. Itoh Techno-Science*	-	5.7	4.4	-21.9	10.7
7	Dassault*	12.7	3.7	3.7	-0.9	8.8
8	MacNeal-Schwendler	7.0	9.1	3.5	-61.6	8.4
9	Mitsubishi Electric*	3.9	4.3	2.7	-36.4	6.5
10	Toyo Information Systems*	1.6	1.3	1.1	-20.1	2.6
11	Kubota Computer	-	0.9	0.7	-20.7	1.8
12	Aspen Technology	0.3	0.6	0.5	-18.3	1.3
13	Ansys	0.6	0.7	0.5	-37.8	1.1
14	Informatix*	0.7	0.5	0.4	-13.3	1.0
15	Century Research Center	0.6	0.5	0.4	-22.2	0.8
16	Mechanical Dynamics	0.3	0.2	0.2	18.0	0.6
17	ESRI	0	0.2	0.2	18.2	0.4
18	Pasco*	0.5	0.3	0.1	-59.4	0.3
19	Meta-Software	0.2	0	0.1	73.6	0.2
20	Whessoe Computing Systems	0.1	0.1	0.1	-17.0	0.2
21	Harris EDA	0.2	0.1	0.1	-4.6	0.2
22	GRAFTEK	0.1	0.1	0.1	-11.1	0.2
23	Computational Mechanics	-	0.1	0.1	-24.3	0.1
24	Technodia*	0.2	0	0	36.8	0.1
25	Analogy	0	0	0	125.9	0.1
26	Framasoft	0.1	0	0	31.4	0.1
27	PCI Remote Sensing Corp	-	0	0	74.6	0.1
28	SIMUCAD	0	0	0	-2.8	0
29	Dynamic Graphics	0	0	0	-44.5	0
30	Rasna Corporation	-	-	0	NA	0
	All N.A. Companies	45.8	44.4	25.2	-43.1	60.7
	All European Companies	1.7	0.8	0.2	-77.8	0.4
	All Asian Companies	61.3	31.3	16.2	-48.3	38.9
	All Companies	108.7	76.4	41.6	-45.6	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table B-1
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Japan Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	ACA Ltd.	1.3	1.4	1.5	4.6	0.1
2	Accel Technologies	0.4	0.4	0.4	9.9	0
3	Accugraph	0.1	0.1	-	-100.0	-
4	ACTEL	-	0.5	1.2	142.9	0.1
5	Adam Net	2.4	5.4	6.9	27.2	0.5
6	ADRA Systems	2.0	2.8	3.2	11.5	0.2
7	ALDEC	0.3	0.3	0.4	18.7	0
8	Alias Research	4.0	4.3	5.2	22.2	0.4
9	ALTERA	1.1	2.0	3.0	52.6	0.2
10	Altium*	65.5	68.0	76.9	13.1	5.8
11	American Small Business Comp.	0.1	0.1	0.2	59.9	0
12	Analogy	0.8	1.0	1.2	20.0	0.1
13	Andor*	29.5	26.6	28.7	8.1	2.2
14	Anilam Electronics	1.0	0.8	0.8	2.1	0.1
15	Ansys	4.1	4.3	4.6	5.7	0.3
16	Applicon	1.0	0.9	0.9	-2.8	0.1
17	APTIX	0.1	0.7	1.2	78.7	0.1
18	ARCSYS	-	0.5	1.5	208.9	0.1
19	ARGO GRAPHICS*	3.1	3.4	3.6	4.4	0.3
20	ASHLAR	-	0.4	1.3	262.9	0.1
21	Aspen Technology	1.1	2.4	2.3	-1.0	0.2
22	AT & T	-	-	0.3	NA	0
23	Aura CAD/CAM Systems	-	0.1	-	-100.0	-
24	Auto-Trol	0.5	0.1	0.2	27.5	0
25	Autodesk	52.3	31.1	33.5	7.8	2.5
26	BATISOFT	0.1	0	-	-100.0	-
27	Boothroyd Dewhurst	0.1	0.1	0.1	21.2	0
28	C. Itoh Techno-Science*	24.4	52.5	59.0	12.5	4.5
29	CAD Centre	0.9	1.4	1.9	37.3	0.1
30	CAD-UL	-	0.1	0.1	8.8	0
31	Cadence	61.3	39.7	46.9	18.2	3.6
32	CADIX	17.6	20.3	21.8	7.2	1.7
33	CADKEY	0.8	0.7	0.6	-11.9	0
34	CADSI	0.3	0.5	0.5	-1.0	0
35	CAMAX Manufacturing	1.1	1.6	1.4	-8.5	0.1
36	Carrier Corporation	0.4	0.3	0	-93.0	0
37	Cascade Design Automation	2.6	2.7	3.6	31.5	0.3

(Continued)

Table B-1 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Japan Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
38	Century Research Center	8.3	7.4	8.1	9.3	0.6
39	Chronology	-	-	0.2	NA	0
40	Cimatron	0.2	0.7	1.6	147.0	0.1
41	CIMLINC	0.6	0.8	1.0	23.5	0.1
42	Cimplex	-	-	0	NA	0
43	CLARIS	0.2	0.1	-	-100.0	-
44	CNC Software	0.4	0.4	0.3	-21.3	0
45	COMPASS Design Automation	6.6	9.0	9.5	4.7	0.7
46	Computational Mechanics	-	0.2	0.2	8.5	0
47	Computervision	23.7	27.0	23.2	-14.0	1.8
48	Concentra	1.4	0.4	0.5	24.0	0
49	Contec Microelectronics	1.0	1.3	1.5	10.0	0.1
50	Cooper & Chyan Technology	-	0.1	0.3	345.0	0
51	CPU	7.1	9.6	11.0	14.1	0.8
52	CrossCheck Technology	1.8	4.1	5.2	26.5	0.4
53	Dassault*	23.2	12.2	14.1	15.5	1.1
54	Data I/O	0.4	0.9	0.9	-	0.1
55	Delcam International	-	0.5	0.7	25.9	0.1
56	Deneb Robotics	-	-	0.8	NA	0.1
57	Design Acceleration	-	-	0.2	NA	0
58	Design Automation	9.3	7.3	7.7	5.6	0.6
59	Dynamic Graphics	0.2	0.1	0.2	32.1	0
60	Earth Resource Mapping	0.5	0.4	0.6	41.0	0
61	EDS Unigraphics	2.8	3.7	3.6	-4.2	0.3
62	Engineered Software	-	0	0	-0.3	0
63	Engineering Mechanics	0.3	0.3	0.4	22.3	0
64	EPIC Design Technology	0.6	1.2	2.6	118.2	0.2
65	ERDAS	0.4	0.2	0.4	63.9	0
66	ESRI	5.2	3.1	3.9	28.7	0.3
67	Exemplar Logic	0.2	0.3	0.6	107.4	0
68	Formtek	1.0	1.5	2.8	81.4	0.2
69	Framasoft	0.6	0.2	0.3	19.0	0
70	Fujitsu*	114.3	161.5	181.9	12.6	13.8
71	Gable CAD Systems	0	0	0	-75.2	0
72	GDS	7.9	12.5	14.9	19.5	1.1
73	Genasys II	1.0	1.2	1.5	26.8	0.1
74	Geo/SQL Corp.	-	0	0	7.4	0

(Continued)

Table B-1 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Japan Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
75	GeoGraphix	0.1	0.1	0.1	27.5	0
76	GEOMAX Intl.	0.1	0	0.1	115.9	0
77	Georgia Tech Research Corp.	0.2	0.3	-	-100.0	-
78	Gerber Systems	0.2	1.8	1.3	-25.2	0.1
79	GRAFTEK	0.4	0.5	0.5	7.1	0
80	Graphisoft Group	0.2	0	0.1	127.9	0
81	GRAPHSOFT	-	-	0.4	NA	0
82	Graphtec Engineering	6.9	7.0	7.9	12.4	0.6
83	Hakuto*	16.5	21.2	23.6	11.2	1.8
84	Harris EDA	3.9	4.1	4.7	14.5	0.4
85	Hewlett-Packard	15.0	29.8	32.0	7.5	2.4
86	High Level Design Systems	-	0.5	0.6	22.6	0
87	Hitachi	73.1	80.8	86.9	7.5	6.6
88	Hitachi Zosen Info Systems	37.0	41.0	36.0	-12.2	2.7
89	i-Logix	0.2	0.3	0.2	-22.2	0
90	IBM	114.3	128.9	114.7	-11.0	8.7
91	ICEM Technologies	1.5	0.6	0.8	23.4	0.1
92	IKOS Systems	1.3	1.4	2.0	41.5	0.2
93	IMSI	0.2	0.3	0.3	-	0
94	Info. Services Int'l. Dentsu*	40.2	50.5	58.4	15.7	4.4
95	Informatix*	2.5	3.0	5.2	75.7	0.4
96	INS Engineering	7.3	29.8	37.3	25.2	2.8
97	Integrated Silicon Systems	0.5	0.7	1.3	78.5	0.1
98	Intergraph	14.0	15.2	16.4	8.2	1.2
99	InterHDL	-	-	0.1	NA	0
100	Intusoft	-	-	0	NA	0
101	ISDATA	-	-	0.1	NA	0
102	Isicad	0.9	0.3	0.1	-56.8	0
103	Kanematsu Computer Systems*	4.3	6.2	3.6	-41.7	0.3
104	Kanematsu Semiconductor*	1.1	0.5	-	-100.0	-
105	Kockums Computer Systems	0.7	1.7	1.9	10.5	0.1
106	Kozo Keikaku Engineering*	16.7	22.6	24.6	8.9	1.9
107	Kubota Computer	8.3	6.1	7.1	15.3	0.5
108	Landmark Graphics	3.5	6.1	7.0	14.8	0.5
109	Laser-Scan	0.2	0.2	0.3	22.4	0
110	Livermore Software Tech.	0.1	0.1	0.1	56.0	0
111	LSI Logic	1.0	1.3	1.6	18.8	0.1

(Continued)

Table B-1 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Japan Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
112	MacNeal-Schwendler	14.6	17.2	11.0	-35.9	0.8
113	MapInfo	-	0.9	1.6	81.4	0.1
114	MARC	6.4	8.2	9.6	18.0	0.7
115	Marubeni Hytech*	36.7	39.7	44.0	10.8	3.3
116	Matra Datavision	3.8	3.6	4.2	16.0	0.3
117	MCS	0.8	0.7	0.8	5.3	0.1
118	Mechanical Dynamics	2.2	1.4	1.7	20.0	0.1
119	Mentor Graphics	23.3	25.7	27.4	6.5	2.1
120	Meta-Software	2.3	2.3	4.3	82.4	0.3
121	Microsim	0.3	0.3	2.0	571.2	0.1
122	Minc Software	0.1	0	0	-5.8	0
123	Mitsubishi Electric*	12.9	14.6	14.0	-3.8	1.1
124	Mitsui Engineering	9.2	20.1	16.7	-17.2	1.3
125	MOSS Systems Group	0.4	0.2	0.1	-30.5	0
126	MOTOROLA	0.1	0.1	0.1	20.7	0
127	Mutoh Industries*	53.9	41.0	21.9	-46.6	1.7
128	NEC	84.5	96.4	103.4	7.3	7.9
129	NEOCAD	0.3	0.9	1.2	31.0	0.1
130	Nihon Itek*	5.5	5.0	6.4	28.7	0.5
131	Nihon Unisys	44.2	62.9	69.9	11.1	5.3
132	Norlinvest Ltd.	0.8	0.9	-	-100.0	-
133	OEA International	-	0.2	0.2	21.4	0
134	OKURA*	6.3	10.8	14.3	32.7	1.1
135	Omron	6.4	5.4	6.0	11.3	0.5
136	Optem Engineering	-	0.2	0.3	17.7	0
137	OrCAD EDA	0.8	0.6	0.8	19.1	0.1
138	PADS Software	0.2	3.6	2.6	-28.3	0.2
139	Parametric Technology	10.6	14.0	26.6	90.7	2.0
140	Pasco*	4.9	5.5	6.3	13.6	0.5
141	Pathtrace Engineering Systems	0.1	0	0	-	0
142	PCI Remote Sensing Corp	-	0.3	0.5	74.6	0
143	PROCAD GmbH	0.8	2.7	-	-100.0	-
144	Quantic Laboratories	0.3	0.4	0.5	55.3	0
145	Quickturn Design Systems	2.9	5.4	8.9	62.6	0.7
146	Radan Computational	-	0.6	0.7	15.0	0.1
147	Rasna Corporation	0.1	1.0	1.3	32.6	0.1
148	Rebis	-	-	0.9	NA	0.1

(Continued)

Table B-1 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Japan Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
149	Ricoh*	4.4	9.4	11.6	23.5	0.9
150	SDRC	28.3	26.7	29.5	10.5	2.2
151	Seiko*	44.0	36.8	37.3	1.4	2.8
152	SES Inc.	0.5	0.8	1.0	21.4	0.1
153	Sharp*	23.9	27.9	32.5	16.4	2.5
154	SHL VISION Solutions	2.7	0.9	-	-100.0	-
155	Sigma Design	0.4	0.5	0.7	54.9	0.1
156	Silicon Valley Research	2.9	1.8	2.0	10.3	0.2
157	SIMUCAD	0.2	0.3	0.3	7.6	0
158	Softdesk	0.1	0.1	0	-63.3	0
159	Sophia Systems*	5.3	3.9	4.1	5.4	0.3
160	Speed	-	0.2	0.2	17.4	0
161	SRAC	0.7	0.8	0.9	14.3	0.1
162	Star Informatic	-	0.2	0.2	6.7	0
163	Straessle Informationssysteme	1.5	1.3	1.3	3.7	0.1
164	Sumisho Electronics*	4.9	19.7	21.9	11.0	1.7
165	Summitt Design	2.5	2.8	5.2	86.5	0.4
166	Superdraft	0.1	0.1	0.1	-29.5	0
167	Synercom	0.8	0.4	-	-100.0	-
168	Synopsys	9.5	20.2	38.5	90.4	2.9
169	Sysdeco Innovation	-	0.2	0.2	20.4	0
170	Systems Science	0.1	0.1	0.1	39.9	0
171	Tanner Research	-	-	0.1	NA	0
172	Technodia*	0.6	5.5	5.4	-1.7	0.4
173	TECHSPERT*	0.4	0.6	1.5	165.9	0.1
174	Teradyne	0.3	0.2	-	-100.0	-
175	Terr-Mar Resource Info Svs	0.2	0.2	0.2	-3.4	0
176	Tokyo Electron*	17.6	14.0	16.0	14.5	1.2
177	Toshiba Engineering*	9.8	9.9	10.9	10.8	0.8
178	Toshiba*	66.4	72.0	78.1	8.6	5.9
179	Toyo Information Systems*	7.2	8.4	9.2	9.8	0.7
180	TSSI Japan*	1.6	1.6	2.2	32.7	0.2
181	Uchida Yoko	13.5	13.1	14.5	10.3	1.1
182	ULTImate Technology	0.4	0.4	0.1	-57.3	0
183	Understanding Systems	0	0	-	-100.0	-
184	Variation Systems Analysis	-	-	0	NA	0
185	VEDA	-	-	0.3	NA	0

(Continued)

Table B-1 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Japan Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
186	Viewlogic Systems	4.0	10.3	9.3	-8.9	0.7
187	VLSI Libraries	0.2	0.3	0.9	178.0	0.1
188	Wacom *	29.5	18.9	18.0	-4.5	1.4
189	Whessoe Computing Systems	0.2	0.2	0.2	-0.9	0
190	Wiechers Datentechnik	0	0	0.2	534.2	0
191	XILINX	0.3	0.2	1.0	305.2	0.1
192	Yokogawa Digital Computer	11.9	17.5	20.8	18.7	1.6
193	Zuken-Redac	51.7	48.1	50.0	4.0	3.8
194	Zycad	3.8	1.6	1.6	-3.0	0.1
	All N.A. Companies	470.5	509.5	565.9	11.1	43.0
	All European Companies	14.9	18.3	17.9	-2.0	1.4
	All Asian Companies	631.5	675.5	731.9	8.3	55.6
	All Companies	1,116.9	1,203.3	1,315.7	9.3	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-13
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	3.6	28.7	40.1	39.8	15.7
2	Intergraph	8.4	16.4	23.5	43.8	9.2
3	Cadence	25.2	16.4	20.9	27.1	8.2
4	IBM	10.8	15.7	17.7	12.6	7.0
5	ESRI	5.4	13.5	14.4	6.9	5.6
6	Mentor Graphics	12.4	13.1	12.5	-5.0	4.9
7	Dassault*	4.3	8.2	11.0	34.4	4.3
8	EDS Unigraphics	5.8	7.7	8.8	14.0	3.5
9	SDRC	1.8	7.5	8.4	10.9	3.3
10	Altium*	4.9	6.3	7.0	11.3	2.7
11	GDS	1.1	4.8	6.3	30.0	2.5
12	COMPASS Design Automation	2.2	5.7	5.9	4.7	2.3
13	Synopsys	2.2	1.7	5.7	237.6	2.2
14	Siemens Nixdorf Info systeme	3.4	3.1	5.7	83.7	2.2
15	Landmark Graphics	1.9	3.3	3.8	16.8	1.5
16	Zuken-Redac	2.1	4.8	3.3	-31.7	1.3
17	Investronica SA	3.1	3.2	3.3	1.6	1.3
18	Computervision	13.4	7.0	3.2	-53.8	1.3
19	Smallworld Systems	-	-	3.1	NA	1.2
20	Genasys II	2.2	2.6	2.9	11.4	1.1
21	Matra Datavision	0.6	2.1	2.6	26.7	1.0
22	IEZ	-	1.5	2.4	62.1	0.9
23	Zycad	1.3	3.3	2.4	-27.3	0.9
24	Cimatron	0.2	0.7	2.3	249.8	0.9
25	Delcam International	0.4	2.0	2.3	16.5	0.9
26	PCI Remote Sensing Corp	-	0.5	2.1	336.4	0.8
27	MacNeal-Schwendler	4.4	3.6	1.9	-47.6	0.7
28	Viewlogic Systems	0.8	2.2	1.8	-21.1	0.7
29	Quickturn Design Systems	0.3	2.0	1.8	-10.6	0.7
30	CrossCheck Technology	0.4	0.7	1.5	127.7	0.6
	All N.A. Companies	122.6	183.8	220.7	20.1	86.6
	All European Companies	12.0	17.3	28.5	64.9	11.2
	All Asian Companies	2.8	6.7	5.8	-12.9	2.3
	All Companies	137.4	207.7	255.0	22.8	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-14
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, Mechanical, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	1.4	11.5	16.1	40.2	19.9
2	IBM	9.3	13.0	15.1	15.7	18.6
3	Dassault*	3.9	8.0	10.8	34.8	13.3
4	EDS Unigraphics	5.8	7.7	8.8	14.0	10.9
5	SDRC	1.8	7.5	8.4	10.9	10.3
6	Altium*	3.9	5.1	5.9	14.1	7.2
7	Investronica SA	3.1	3.2	3.3	1.6	4.0
8	Computervision	12.5	6.1	2.8	-54.2	3.5
9	Matra Datavision	0.6	2.1	2.6	26.7	3.3
10	Intergraph	2.1	2.9	2.4	-17.2	2.9
11	Cimatron	0.2	0.7	2.3	249.8	2.8
12	Delcam International	0.4	2.0	2.3	16.5	2.8
13	MacNeal-Schwendler	4.4	3.6	1.9	-47.6	2.3
14	Ansys	0.7	1.1	1.3	13.3	1.6
15	MCS	0.1	1.2	1.3	8.1	1.6
16	CAMAX Manufacturing	0.3	0.8	1.2	45.5	1.4
17	Straessle Informationssysteme	0.3	0.1	1.1	686.3	1.4
18	Gerber Systems	0	0.5	1.0	91.3	1.2
19	Alias Research	0.4	0.6	0.9	37.3	1.1
20	Hewlett-Packard	0.6	0.6	0.8	43.8	1.0
21	Design Automation	0.2	0.7	0.8	9.9	1.0
22	ADRA Systems	0.4	0.7	0.7	11.5	0.9
23	Formtek	0.2	0.4	0.7	80.3	0.9
24	Mechanical Dynamics	0.3	0.5	0.7	20.0	0.8
25	Tebis	-	0.2	0.6	185.7	0.7
26	CNC Software	0.4	0.4	0.5	10.1	0.6
27	B.A.Intelligence Networks	0.1	0.2	0.4	66.7	0.5
28	Hitachi Zosen Info Systems	0.3	0.4	0.3	-10.7	0.4
29	CADKEY	-	0.4	0.3	-11.9	0.4
30	Applicon	0.3	0.3	0.3	10.6	0.4
	All N.A. Companies	43.2	61.4	66.4	8.2	82.0
	All European Companies	5.9	9.4	13.4	42.9	16.5
	All Asian Companies	0.6	1.2	1.2	1.5	1.5
	All Companies	49.7	72.0	81.0	12.6	100.0

* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-15
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, AEC, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	1.5	12.3	17.5	41.8	50.1
2	Intergraph	3.2	2.0	2.8	40.3	8.0
3	IEZ	-	1.5	2.4	62.1	6.9
4	GDS	0.3	0.2	1.8	1,113.0	5.3
5	IBM	1.0	1.7	1.5	-10.4	4.4
6	CAD Centre	1.1	1.0	1.3	37.3	3.8
7	Softdesk	0.7	0.7	0.9	20.5	2.6
8	Rebis	-	-	0.8	NA	2.3
9	Aspen Technology	0.2	0.4	0.7	81.0	2.0
10	EA Systems	0.4	0.6	0.7	13.3	1.9
11	Graphisoft Group	0.1	0.2	0.7	188.2	1.9
12	Design Automation	0	0.3	0.6	156.0	1.8
13	Altium*	0.5	0.6	0.4	-18.8	1.3
14	Computervision	0.8	0.9	0.4	-51.6	1.2
15	CADWORKS	0.5	0.1	0.4	198.9	1.0
16	Carrier Corporation	0	0.1	0.3	122.9	0.9
17	MOSS Systems Group	0.2	0.3	0.3	15.3	0.9
18	Eagle Point	-	0.2	0.3	85.6	0.9
19	International Software Systems	0.2	0.2	0.3	16.7	0.8
20	ACA Ltd.	0.2	0.2	0.2	22.1	0.7
21	Kockums Computer Systems	0	0.2	0.2	35.7	0.7
22	Accugraph	0	0.1	0.2	300.7	0.6
23	Dassault*	0.3	0.2	0.2	13.3	0.6
24	Sigma Design	0.1	0.1	0.1	-28.5	0.3
25	Hochtief	0.1	0.1	0.1	28.0	0.2
26	RoboCAD Solutions	-	-	0.1	NA	0.2
27	Informatix*	0	0	0.1	207.7	0.2
28	Formtek	-	-	0	NA	0.1
29	Isicad	0.1	0	0	12.5	0.1
30	GRAPHSOFT	-	-	0	NA	0.1
	All N.A. Companies	9.2	19.9	28.9	45.2	82.8
	All European Companies	1.7	3.4	5.4	56.9	15.3
	All Asian Companies	0.1	0.3	0.7	137.6	1.9
	All Companies	10.9	23.6	34.9	47.9	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-16
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M) Top 30 Asia/Pacific Software Companies, GIS/Mapping, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Intergraph	2.5	10.9	17.8	64.1	27.2
2	ESRI	5.4	13.5	14.4	6.9	22.0
3	Siemens Nixdorf Info systeme	3.4	3.1	5.7	83.7	8.7
4	Autodesk	0.4	3.2	4.5	41.1	6.8
5	GDS	0.8	4.7	4.4	-5.2	6.8
6	Landmark Graphics	1.9	3.3	3.8	16.8	5.9
7	Smallworld Systems	-	-	3.1	NA	4.8
8	Genasys II	2.2	2.6	2.9	11.4	4.4
9	PCI Remote Sensing Corp	-	0.5	2.1	336.4	3.1
10	Radian Corporation	1.0	0.9	1.2	24.6	1.8
11	Earth Resource Mapping	0.2	0.8	0.9	12.0	1.4
12	MapInfo	0.3	0.5	0.9	97.9	1.4
13	Enghouse Systems Ltd.	0.3	0.5	0.5	1.1	0.8
14	SHL VISION Solutions	0.9	1.2	0.5	-59.9	0.8
15	IBM	0.1	0.4	0.4	5.4	0.7
16	UNISYS	0.2	0.4	0.4	19.7	0.7
17	ERDAS	0.2	0.5	0.4	-4.5	0.7
18	Dynamic Graphics	0.2	0.3	0.3	12.7	0.5
19	GEOMAX Intl.	0	0	0.3	429.0	0.4
20	Laser-Scan	0.1	0.2	0.2	1.7	0.3
21	Strategic Mapping	0.7	0.1	0.1	18.8	0.2
22	APIC Systemes	0.1	0.1	0.1	22.6	0.2
23	Facility Mapping Systems	0.1	0.1	0.1	70.5	0.2
24	Terr-Mar Resource Info Svs	0.1	0.1	0.1	11.4	0.1
25	GeoGraphix	0	0.1	0.1	6.4	0.1
26	Sysdeco Innovation	-	0.1	0.1	11.7	0.1
27	Geo/SQL Corp.	0.1	0	0	17.7	0.1
28	Clemessy Geocity	0	0	0	9.7	0.1
29	Eagle Point	0	0	0	-67.0	0
30	Accugraph	-	-	0	NA	0
	All N.A. Companies	18.0	45.0	56.2	24.9	85.9
	All European Companies	3.6	3.5	9.2	164.8	14.1
	All Asian Companies	-	-	-	NA	-
	All Companies	21.6	48.5	65.5	34.9	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-17
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M) Top 30 Asia/Pacific Software Companies, Electronic Design Automation, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	25.2	16.4	20.9	27.1	28.4
2	Mentor Graphics	12.4	13.1	12.5	-5.0	17.0
3	COMPASS Design Automation	2.2	5.7	5.9	4.7	8.1
4	Synopsys	2.2	1.7	5.7	237.6	7.8
5	Zuken-Redac	2.1	4.8	3.3	-31.7	4.5
6	Zycad	1.3	3.3	2.4	-27.3	3.2
7	Autodesk	0.2	1.7	2.1	21.2	2.8
8	Viewlogic Systems	0.8	2.2	1.8	-21.1	2.4
9	Quickturn Design Systems	0.3	2.0	1.8	-10.6	2.4
10	CrossCheck Technology	0.4	0.7	1.5	127.7	2.0
11	Summitt Design	0.6	0.5	1.3	158.9	1.8
12	ARCSYS	-	0.3	1.2	292.1	1.7
13	Cascade Design Automation	0.6	0.9	1.1	24.5	1.5
14	ALTERA	0.2	0.9	1.0	4.4	1.3
15	PADS Software	0.1	0.4	0.8	105.9	1.1
16	LSI Logic	0.5	0.7	0.8	13.9	1.1
17	IKOS Systems	0.2	0.2	0.7	311.7	1.0
18	Silicon Valley Research	-	0.4	0.7	68.4	0.9
19	IBM	0.4	0.6	0.7	15.8	0.9
20	Altium*	0.4	0.6	0.7	15.8	0.9
21	Harris EDA	0.4	0.6	0.6	10.7	0.9
22	Analogy	0.4	0.6	0.6	8.7	0.9
23	Yokogawa Digital Computer	-	0.4	0.6	74.3	0.9
24	Hewlett-Packard	0.3	0.7	0.6	-15.4	0.8
25	Intergraph	0.6	0.6	0.5	-17.6	0.7
26	Meta-Software	0.3	0.7	0.5	-27.4	0.7
27	Integrated Silicon Systems	0.1	0.2	0.4	78.5	0.6
28	ACTEL	0.3	0.4	0.4	8.7	0.6
29	OrCAD EDA	0.5	0.3	0.4	13.4	0.5
30	Norlinvest Ltd.	0.4	0.6	0.3	-51.0	0.4
	All N.A. Companies	52.2	57.4	69.1	20.4	93.9
	All European Companies	0.8	1.0	0.5	-47.4	0.7
	All Asian Companies	2.1	5.2	3.9	-24.3	5.3
	All Companies	55.2	63.6	73.6	15.7	100.0

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-18
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, Electronic CAE, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	12.5	7.4	9.9	34.7	23.4
2	Mentor Graphics	8.7	8.8	7.6	-14.0	17.9
3	Synopsys	2.2	1.7	5.7	237.6	13.5
4	Zycad	1.3	3.3	2.4	-27.3	5.6
5	Autodesk	0.2	1.7	2.1	21.2	4.9
6	COMPASS Design Automation	1.0	2.4	2.0	-16.2	4.7
7	Viewlogic Systems	0.8	2.2	1.8	-21.1	4.2
8	Quickturn Design Systems	0.3	2.0	1.8	-10.6	4.2
9	CrossCheck Technology	0.4	0.7	1.5	127.7	3.5
10	ALTERA	0.2	0.9	1.0	4.4	2.3
11	IKOS Systems	0.2	0.2	0.7	311.7	1.8
12	LSI Logic	0.4	0.6	0.7	12.4	1.6
13	Analogy	0.4	0.6	0.6	8.7	1.5
14	Hewlett-Packard	0.3	0.7	0.6	-15.4	1.3
15	Meta-Software	0.3	0.7	0.5	-27.4	1.2
16	ACTEL	0.3	0.4	0.4	8.7	1.0
17	Harris EDA	0.2	0.3	0.3	7.4	0.8
18	EPIC Design Technology	0.1	0.1	0.3	102.0	0.7
19	Intergraph	0.2	0.3	0.3	-15.4	0.7
20	VLSI Libraries	0	0.1	0.3	204.1	0.6
21	OrCAD EDA	0.3	0.2	0.3	19.1	0.6
22	APTIX	0	0.2	0.2	35.3	0.5
23	XILINX	0.2	0.2	0.2	35.5	0.5
24	Seiko*	0.3	0.2	0.2	11.1	0.5
25	Cascade Design Automation	0.1	0.2	0.2	7.3	0.5
26	SIMUCAD	0	0.1	0.1	34.4	0.3
27	ALDEC	0	0.1	0.1	57.3	0.2
28	Quantic Laboratories	0.1	0.1	0.1	9.2	0.2
29	Data I/O	0.3	0.1	0.1	0	0.2
30	i-Logix	0	0.1	0.1	29.6	0.2
	All N.A. Companies	31.9	36.7	42.2	15.2	99.7
	All European Companies	0.3	0.3	0.1	-49.3	0.3
	All Asian Companies	0.6	2.3	-	-100.0	-
	All Companies	32.8	39.3	42.4	7.9	100.0

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-19
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, IC Layout, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	10.8	7.4	9.1	23.0	46.8
2	COMPASS Design Automation	1.2	3.3	4.0	19.8	20.4
3	Mentor Graphics	1.0	1.2	1.6	33.7	8.2
4	Summitt Design	0.6	0.5	1.3	158.9	6.8
5	ARCSYS	-	0.3	1.2	292.1	6.4
6	Cascade Design Automation	0.4	0.7	0.9	29.1	4.6
7	Silicon Valley Research	-	0.4	0.7	68.4	3.6
8	Integrated Silicon Systems	0.1	0.2	0.4	78.5	2.2
9	Intergraph	0.2	0.1	0.1	-10.7	0.5
10	LSI Logic	0.1	0.1	0.1	25.8	0.5
11	Tanner Research	-	-	0	NA	0
	All N.A. Companies	14.4	14.2	19.4	36.4	100.0
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	14.4	14.2	19.4	36.4	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-20
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, PCB/MCM/Hybrid, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Mentor Graphics	2.8	3.1	3.3	5.3	28.0
2	Zuken-Redac	1.6	2.5	3.3	33.0	27.9
3	Cadence	1.8	1.7	1.9	11.6	15.9
4	PADS Software	0	0.4	0.7	103.1	6.2
5	IBM	0.4	0.6	0.7	15.8	5.8
6	Altium*	0.4	0.6	0.7	15.8	5.8
7	Yokogawa Digital Computer	-	0.4	0.6	74.3	5.3
8	Harris EDA	0.2	0.3	0.3	14.9	2.4
9	Norlinvest Ltd.	0.4	0.6	0.2	-59.9	2.0
10	Accel Technologies	0.1	0.1	0.2	100.8	1.7
11	Intergraph	0.2	0.2	0.2	-24.5	1.4
12	CAD-UL	-	0.1	0.1	4.3	1.1
13	OrCAD EDA	0.2	0.1	0.1	2.0	1.0
14	Royal Digital Centers	0	0.1	0.1	27.5	0.8
15	ULTImate Technology	0.1	0.1	0	-30.8	0.3
16	Cooper & Chyan Technology	-	0	0	423.5	0.3
17	Ziegler Informatics	0	0	0	24.5	0.1
18	GRAPHSOFT	-	-	0	NA	0
19	Softdesk	0	0	0	20.0	0
	All N.A. Companies	5.9	6.5	7.5	14.7	63.4
	All European Companies	0.5	0.8	0.4	-46.7	3.4
	All Asian Companies	1.6	2.8	3.9	38.2	33.2
	All Companies	8.0	10.1	11.8	16.7	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-21
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, All Applications, UNIX

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	24.7	16.4	20.9	27.1	13.0
2	Mentor Graphics	12.2	12.9	12.2	-5.4	7.6
3	Intergraph	6.9	11.6	12.2	5.2	7.6
4	ESRI	4.5	9.6	10.0	3.8	6.2
5	EDS Unigraphics	5.0	6.4	8.8	37.5	5.5
6	IBM	2.9	7.6	8.4	9.7	5.2
7	SDRC	1.7	7.5	8.4	12.0	5.2
8	Dassault*	1.5	5.7	8.2	42.8	5.1
9	COMPASS Design Automation	2.1	5.7	5.9	4.7	3.7
10	Synopsys	2.2	1.7	5.7	237.6	3.5
11	Siemens Nixdorf Info systeme	3.0	1.9	4.0	110.9	2.5
12	Landmark Graphics	1.9	3.3	3.8	16.8	2.4
13	Zuken-Redac	2.1	4.8	3.2	-33.1	2.0
14	Smallworld Systems	-	-	3.1	NA	1.9
15	Computervision	13.3	6.7	3.1	-54.4	1.9
16	Genasys II	2.0	2.3	2.6	12.6	1.6
17	Matra Datavision	0.6	2.0	2.6	27.3	1.6
18	Autodesk	0.2	1.7	2.4	39.8	1.5
19	Zycad	1.3	3.3	2.4	-27.3	1.5
20	IEZ	-	1.5	2.3	53.6	1.4
21	Delcam International	0.4	1.9	2.2	14.5	1.4
22	GDS	0.2	1.3	2.2	72.5	1.4
23	Quickturn Design Systems	0.3	2.0	1.8	-10.6	1.1
24	CrossCheck Technology	0.4	0.7	1.5	127.7	0.9
25	CAD Centre	1.2	1.0	1.4	37.3	0.9
26	MacNeal-Schwendler	2.3	1.8	1.3	-25.0	0.8
27	Summitt Design	0.6	0.5	1.3	158.9	0.8
28	ARCSYS	-	0.3	1.2	292.1	0.8
29	Straessle Informationssysteme	0.3	0.1	1.1	686.3	0.7
30	Cascade Design Automation	0.6	0.9	1.1	24.5	0.7
	All N.A. Companies	95.6	121.9	137.5	12.8	85.6
	All European Companies	6.6	10.1	18.9	86.6	11.8
	All Asian Companies	2.6	5.7	4.3	-24.2	2.7
	All Companies	104.8	137.7	160.8	16.7	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-22
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, All Applications, NT/Hybrid

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Intergraph	-	-	4.8	NA	77.4
2	ESRI	-	-	0.6	NA	10.6
3	EA Systems	-	-	0.3	NA	5.5
4	IEZ	-	-	0.1	NA	2.1
5	PCI Remote Sensing Corp	-	-	0.1	NA	1.7
6	Mentor Graphics	-	-	0.1	NA	1.6
7	PADS Software	-	-	0	NA	0.5
8	Intusoft	-	-	0	NA	0.5
9	SIMUCAD	-	0	0	102.5	0.1
10	InterHDL	-	-	0	NA	0
11	Rasna Corporation	-	0	-	-100.0	-
	All N.A. Companies	-	0	6.0	16,002.7	97.9
	All European Companies	-	-	0.1	NA	2.1
	All Asian Companies	-	-	-	NA	-
	All Companies	-	0	6.1	16,342.5	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-23
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, All Applications, Personal Computer

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	3.3	27.0	37.7	39.8	47.3
2	IBM	4.9	4.5	7.0	56.1	8.7
3	Altium*	4.9	4.5	7.0	56.1	8.7
4	Intergraph	1.3	4.7	6.6	41.0	8.3
5	Investronica SA	3.1	3.2	3.3	1.6	4.1
6	ESRI	0.8	3.2	3.1	-2.2	3.9
7	Design Automation	0.2	1.0	1.4	47.9	1.8
8	Cimatron	0.1	0.3	1.4	310.1	1.8
9	Siemens Nixdorf Info systeme	-	0.5	1.2	149.2	1.5
10	ALTERA	0.2	0.9	1.0	4.4	1.2
11	PCI Remote Sensing Corp	-	0.1	0.9	554.7	1.2
12	MCS	-	0.6	0.9	57.1	1.1
13	Softdesk	0.7	0.7	0.9	20.3	1.1
14	MapInfo	0.3	0.4	0.8	93.8	1.1
15	Rebis	-	-	0.8	NA	1.0
16	Viewlogic Systems	0.2	0.9	0.7	-13.7	0.9
17	GDS	-	-	0.7	NA	0.9
18	PADS Software	0	0.4	0.7	99.6	0.9
19	Graphisoft Group	0.1	0.2	0.7	187.9	0.8
20	Tebis	-	0.2	0.5	156.4	0.6
21	CAMAX Manufacturing	0.2	0.2	0.5	112.2	0.6
22	CNC Software	0.4	0.4	0.5	10.1	0.6
23	CADWORKS	0.8	0.3	0.5	79.4	0.6
24	Radian Corporation	0.7	0.3	0.4	22.5	0.5
25	Enghouse Systems Ltd.	0.1	0.4	0.4	1.1	0.5
26	OrCAD EDA	0.5	0.3	0.4	13.4	0.5
27	CADKEY	-	0.4	0.3	-7.3	0.4
28	Carrier Corporation	0	0.1	0.3	122.9	0.4
29	Norlinvest Ltd.	0.4	0.6	0.3	-51.0	0.4
30	Hewlett-Packard	0	0	0.3	607.0	0.4
	All N.A. Companies	17.7	49.5	69.5	40.3	87.1
	All European Companies	4.7	6.2	8.8	41.8	11.0
	All Asian Companies	0.2	1.0	1.5	54.7	1.9
	All Companies	22.6	56.7	79.8	40.7	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-24
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, All Applications, Host/Proprietary

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	GDS	0.9	3.6	3.4	-5.3	40.4
2	Dassault*	2.8	2.5	2.8	14.8	33.9
3	IBM	3.1	3.7	2.4	-34.6	28.6
4	ESRI	0	0.7	0.6	-3.0	7.8
5	Siemens Nixdorf Info systeme	0.4	0.8	0.6	-23.9	6.9
6	MacNeal-Schwendler	2.1	1.8	0.6	-68.6	6.8
7	EA Systems	0.4	0.4	0.3	-29.2	3.2
8	Ansys	0.2	0.2	0.1	-33.4	1.6
9	PCI Remote Sensing Corp	-	0	0.1	336.4	1.2
10	Mechanical Dynamics	0.1	0.1	0.1	18.0	1.1
11	Whessoe Computing Systems	0	0	0	-5.4	0.5
12	Aspen Technology	0.1	0	0	-4.2	0.5
13	Computational Mechanics	-	0	0	-11.3	0.4
14	Harris EDA	0	0	0	-38.8	0.3
15	Analogy	0	0	0	-63.9	0.1
16	Radian Corporation	-	0	0	-25.0	0.1
17	Meta-Software	0	0.1	0	-88.6	0.1
18	GRAFTEK	0	0	0	-11.1	0.1
19	Dynamic Graphics	0	0	0	-35.7	0.1
20	SIMUCAD	0	0	0	21.5	0.1
21	Framasoft	0	0	0	-56.2	0.1
22	Informatix*	-	-	0	NA	0
23	Accugraph	0	0	0	-50.0	0
24	EDS Unigraphics	0.8	1.3	-	-100.0	-
25	Intergraph	0.3	0.1	-	-100.0	-
26	SHL VISION Solutions	0.2	0.1	-	-100.0	-
27	SDRC	0.1	0.1	-	-100.0	-
28	ICEM Technologies	0.1	0.1	-	-100.0	-
29	Synercom	0	0	-	-100.0	-
30	ACA Ltd.	0	0	-	-100.0	-
	All N.A. Companies	9.3	12.3	7.7	-37.3	92.2
	All European Companies	0.7	0.9	0.7	-30.0	7.8
	All Asian Companies	-	-	-	NA	-
	All Companies	10.0	13.2	8.4	-36.8	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table B-2
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Asia/Pacific Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	3Soft	-	-	0	NA	0
2	ACA Ltd.	0.2	0.2	0.2	22.1	0.1
3	Accel Technologies	0.1	0.1	0.2	90.9	0.1
4	Accugraph	0	0.1	0.2	325.8	0.1
5	ACTEL	0.3	0.4	0.4	8.7	0.2
6	ADRA Systems	0.4	0.7	0.7	11.5	0.3
7	ALDEC	0	0.1	0.1	57.3	0
8	Algor Interactive Systems	0	0	0	12.6	0
9	Alias Research	0.4	0.6	0.9	37.3	0.3
10	ALTERA	0.2	0.9	1.0	4.4	0.4
11	Altium*	4.9	6.3	7.0	11.3	2.7
12	American Small Business Comp.	0.1	0.1	0	-96.3	0
13	Analogy	0.4	0.6	0.6	8.7	0.2
14	Anilam Electronics	0.1	0.2	0.2	14.5	0.1
15	Ansys	0.7	1.1	1.3	13.3	0.5
16	APIC Systemes	0.1	0.1	0.1	22.6	0
17	Applicon	0.3	0.3	0.3	10.6	0.1
18	APTIX	0	0.2	0.2	35.3	0.1
19	ARCSYS	-	0.3	1.2	292.1	0.5
20	Aspen Technology	0.2	0.4	0.7	81.0	0.3
21	Aura CAD/CAM Systems	0.1	0	-	-100.0	-
22	Autodesk	3.6	28.7	40.1	39.8	15.7
23	Autometric	0.2	0.1	-	-100.0	-
24	B.A.Intelligence Networks	0.1	0.2	0.4	66.7	0.2
25	BATISOFT	0	0	-	-100.0	-
26	Boothroyd Dewhurst	0	0	0	9.1	0
27	CAD Centre	1.2	1.0	1.4	37.3	0.6
28	CAD-UL	-	0.1	0.1	4.3	0
29	Cadence	25.2	16.4	20.9	27.1	8.2
30	CADKEY	-	0.4	0.3	-11.9	0.1
31	CADSI	0	-	0.1	NA	0
32	CADWORKS	0.8	0.3	0.5	79.4	0.2
33	CAE-link	0	0	-	-100.0	-
34	CAMAX Manufacturing	0.3	0.8	1.2	45.5	0.5
35	Carrier Corporation	0	0.1	0.3	122.9	0.1
36	Cascade Design Automation	0.6	0.9	1.1	24.5	0.4
37	Cimatron	0.2	0.7	2.3	249.8	0.9
38	CLARIS	0	0	-	-100.0	-

(Continued)

Table B-2 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Asia/Pacific Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
39	Clemessy Geocity	0	0	0	9.7	0
40	CNC Software	0.4	0.4	0.5	10.1	0.2
41	COMPASS Design Automation	2.2	5.7	5.9	4.7	2.3
42	Computational Mechanics	-	0.1	0.1	10.0	0.1
43	Computervision	13.4	7.0	3.2	-53.8	1.3
44	Concentra	0.3	0.1	0.1	24.0	0
45	Contec Microelectronics	0.2	0	0	10.0	0
46	Contract Data Research	-	0	-	-100.0	-
47	Cooper & Chyan Technology	-	0	0	423.5	0
48	CrossCheck Technology	0.4	0.7	1.5	127.7	0.6
49	Dassault*	4.3	8.2	11.0	34.4	4.3
50	Data I/O	0.3	0.1	0.1	0	0
51	Delcam International	0.4	2.0	2.3	16.5	0.9
52	Design Automation	0.2	1.0	1.4	47.9	0.6
53	DP Technology	0.1	0.2	0.2	13.5	0.1
54	Dynamic Graphics	0.2	0.3	0.3	12.7	0.1
55	EA Systems	0.4	0.6	0.7	13.3	0.3
56	Eagle Point	0	0.2	0.3	50.7	0.1
57	Earth Resource Mapping	0.2	0.8	0.9	12.0	0.4
58	EDS Unigraphics	5.8	7.7	8.8	14.0	3.5
59	Enghouse Systems Ltd.	0.3	0.5	0.5	1.1	0.2
60	Engineered Software	0	0	0	17.8	0
61	Engineering Mechanics	0	0	0.1	33.6	0
62	EPIC Design Technology	0.1	0.1	0.3	102.0	0.1
63	ERDAS	0.2	0.5	0.4	-2.3	0.2
64	ESRI	5.4	13.5	14.4	6.9	5.6
65	Exemplar Logic	0	0.1	0.1	-14.9	0
66	Facility Mapping Systems	0.1	0.1	0.1	70.5	0
67	Formtek	0.3	0.4	0.7	81.4	0.3
68	Framasoft	0.1	0.1	0	-20.6	0
69	Gable CAD Systems	0	0	0	477.8	0
70	GDS	1.1	4.8	6.3	30.0	2.5
71	Genasys II	2.2	2.6	2.9	11.4	1.1
72	Geo/SQL Corp.	0.1	0	0	17.7	0
73	GeoGraphix	0	0.1	0.1	6.4	0
74	GEOMAX Intl.	0	0	0.3	411.2	0.1
75	Georgia Tech Research Corp.	0.1	0.1	-	-100.0	-

(Continued)

Table B-2 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Asia/Pacific Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
76	Gerber Systems	0	0.5	1.0	91.3	0.4
77	GRAFTEK	0	0.1	0.1	7.1	0
78	Graphisoft Group	0.1	0.2	0.7	187.9	0.3
79	GRAPHSOFT	-	-	0.1	NA	0
80	Harris EDA	0.4	0.6	0.6	10.7	0.2
81	Hewlett-Packard	0.9	1.2	1.4	11.9	0.5
82	Hitachi Zosen Info Systems	0.4	0.4	0.4	-12.2	0.1
83	Hochtief	0.1	0.1	0.1	28.0	0
84	i-Logix	0	0.1	0.1	29.6	0
85	IBM	10.8	15.7	17.7	12.6	7.0
86	ICEM Technologies	0.2	0.2	0.1	-63.0	0
87	IEZ	-	1.5	2.4	62.1	0.9
88	IKOS Systems	0.2	0.2	0.7	311.7	0.3
89	IMSI	0	0	0	-	0
90	Informatix*	0	0	0.1	207.7	0
91	Innovative Data Design	0	0	-	-100.0	-
92	Integrated Silicon Systems	0.1	0.2	0.4	78.5	0.2
93	Intergraph	8.4	16.4	23.5	43.8	9.2
94	InterHDL	-	-	0	NA	0
95	International Software Systems	0.2	0.2	0.3	16.7	0.1
96	Intusoft	-	-	0	NA	0
97	Investronica SA	3.1	3.2	3.3	1.6	1.3
98	Isicad	0.1	0	0	12.5	0
99	Kockums Computer Systems	0	0.2	0.2	35.7	0.1
100	Landmark Graphics	1.9	3.3	3.8	16.8	1.5
101	Laser-Scan	0.1	0.2	0.2	1.7	0.1
102	Livermore Software Tech.	-	0	0.1	95.0	0
103	LSI Logic	0.5	0.7	0.8	13.9	0.3
104	MacNeal-Schwendler	4.4	3.6	1.9	-47.6	0.7
105	MapInfo	0.3	0.5	0.9	97.9	0.3
106	Matra Datavision	0.6	2.1	2.6	26.7	1.0
107	MC2 Engineering Software	0.1	0.1	-	-100.0	-
108	MCS	0.1	1.2	1.3	8.1	0.5
109	Mechanical Dynamics	0.3	0.5	0.7	20.0	0.3
110	Mentor Graphics	12.4	13.1	12.5	-5.0	4.9
111	Meta-Software	0.3	0.7	0.5	-27.4	0.2
112	Microsim	0.1	0.1	-	-100.0	-

(Continued)

Table B-2 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Asia/Pacific Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
113	Minc Software	0	-	0	NA	0
114	MOSS Systems Group	0.2	0.3	0.3	15.3	0.1
115	MOTOROLA	0	0	0	9.0	0
116	Norlinvest Ltd.	0.4	0.6	0.3	-51.0	0.1
117	Optem Engineering	-	0.1	-	-100.0	-
118	OrCAD EDA	0.5	0.3	0.4	13.4	0.1
119	PADS Software	0.1	0.4	0.8	105.9	0.3
120	Pathtrace Engineering Systems	0.1	0	0	-	0
121	PCI Remote Sensing Corp	-	0.5	2.1	336.4	0.8
122	Quantic Laboratories	0.1	0.1	0.1	9.2	0
123	Quickturn Design Systems	0.3	2.0	1.8	-10.6	0.7
124	Radan Computational	-	0	0	-5.0	0
125	Radian Corporation	1.0	0.9	1.2	24.6	0.5
126	Rasna Corporation	0.1	0.3	-	-100.0	-
127	Rebis	-	-	0.8	NA	0.3
128	RoboCAD Solutions	-	-	0.1	NA	0.1
129	Royal Digital Centers	0	0.1	0.1	27.5	0
130	SDRC	1.8	7.5	8.4	10.9	3.3
131	Seiko*	0.3	0.2	0.2	11.1	0.1
132	SHL VISION Solutions	0.9	1.2	0.5	-59.9	0.2
133	Siemens Nixdorf Info systeme	3.4	3.1	5.7	83.7	2.2
134	Sigma Design	0.1	0.1	0.1	-28.5	0
135	Silicon Valley Research	-	0.4	0.7	68.4	0.3
136	SIMUCAD	0	0.1	0.1	34.4	0.1
137	Smallworld Systems	-	-	3.1	NA	1.2
138	Softdesk	0.7	0.8	0.9	20.5	0.4
139	Spectrum Software	0	0	-	-100.0	-
140	Speed	-	0	0	6.1	0
141	SRAC	0.2	0.2	0.2	14.3	0.1
142	Star Informatic	0	0	0	-	0
143	Straessle Informationssysteme	0.3	0.1	1.1	686.3	0.4
144	Strategic Mapping	0.7	0.1	0.1	18.8	0
145	Summitt Design	0.6	0.5	1.3	158.9	0.5
146	Superdraft	0.1	0.1	0.1	20.1	0
147	Synercom	0.1	0.4	-	-100.0	-
148	Synopsys	2.2	1.7	5.7	237.6	2.2
149	Sysdeco Innovation	-	0.1	0.1	11.7	0

(Continued)

Table B-2 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Asia/Pacific Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
150	Systems Science	0	0	0	-6.1	0
151	Tanner Research	-	-	0	NA	0
152	Tebis	-	0.2	0.6	185.7	0.2
153	Teradyne	0.1	0	-	-100.0	-
154	Terr-Mar Resource Info Svs	0.1	0.1	0.1	11.4	0
155	Toshiba Engineering*	0.1	0.1	0.1	-7.7	0
156	ULTImate Technology	0.1	0.1	0	-30.8	0
157	Understanding Systems	0	0	-	-100.0	-
158	UNISYS	0.2	0.4	0.4	19.7	0.2
159	VEDA	0.2	0.1	-	-100.0	-
160	Vero International Software	0.4	0.1	0.2	45.3	0.1
161	Viewlogic Systems	0.8	2.2	1.8	-21.1	0.7
162	VLSI Libraries	0	0.1	0.3	204.1	0.1
163	Whessoe Computing Systems	0.2	0.2	0.2	16.8	0.1
164	Wiechers Datentechnik	0	0	-	-100.0	-
165	XILINX	0.2	0.2	0.2	35.5	0.1
166	Yokogawa Digital Computer	-	0.4	0.6	74.3	0.2
167	Ziegler Informatics	0	0	0	-7.3	0
168	Zuken-Redac	2.1	4.8	3.3	-31.7	1.3
169	Zycad	1.3	3.3	2.4	-27.3	0.9
	All N.A. Companies	122.6	183.8	220.7	20.1	86.6
	All European Companies	12.0	17.3	28.5	64.9	11.2
	All Asian Companies	2.8	6.7	5.8	-12.9	2.3
	All Companies	137.4	207.7	255.0	22.8	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-25
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 China Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	2.0	2.3	2.6	10.6	11.2
2	Cadence	2.8	1.9	2.4	27.1	10.3
3	EDS Unigraphics	1.8	2.0	2.0	3.0	8.8
4	Siemens Nixdorf Info systeme	1.0	0.9	1.7	83.7	7.4
5	Dassault*	-	1.2	1.6	34.4	6.8
6	ESRI	-	1.7	1.3	-24.8	5.7
7	IEZ	-	1.2	1.3	8.3	5.6
8	Altium*	0.8	1.1	1.2	14.7	5.4
9	Autodesk	-	0.2	1.2	557.0	5.1
10	SDRC	0.3	1.0	1.1	10.6	4.9
11	Intergraph	0.6	0.8	1.1	30.4	4.7
12	Investronica SA	0.8	0.8	0.8	-	3.7
13	MacNeal-Schwendler	1.4	1.1	0.5	-49.2	2.3
14	PCI Remote Sensing Corp	-	0.1	0.5	336.4	2.2
15	CAD Centre	0.3	0.3	0.5	37.3	2.1
16	Computervision	2.0	0.9	0.5	-50.1	2.0
17	Matra Datavision	0	0.4	0.4	22.2	1.9
18	Cimatron	0	0.1	0.4	249.8	1.8
19	Viewlogic Systems	0.2	0.5	0.4	-16.8	1.7
20	Ansys	-	0.3	0.4	13.3	1.5
21	Mechanical Dynamics	-	0.3	0.3	20.0	1.4
22	Gerber Systems	-	-	0.3	NA	1.4
23	Rebis	-	-	0.3	NA	1.2
24	CAMAX Manufacturing	-	0.1	0.2	110.9	0.8
25	Zuken-Redac	0.2	0.7	0.2	-74.0	0.8
26	UNISYS	0.1	0.1	0.1	12.3	0.6
27	Delcam International	-	0.1	0.1	-19.2	0.5
28	Terr-Mar Resource Info Svs	-	0.1	0.1	11.4	0.4
29	Applicon	0.1	0.1	0.1	0.7	0.4
30	B.A.Intelligence Networks	0	0	0.1	66.7	0.3
	Other Companies	3.5	2.3	1.9	-15.6	8.3
	All N.A. Companies	11.4	13.6	15.6	14.7	67.9
	All European Companies	2.2	3.9	5.3	34.5	22.9
	All Asian Companies	0.2	0.7	0.2	-74.0	0.8
	All Companies	17.3	20.5	23.0	12.2	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-26
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 China Software Companies, Mechanical, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	1.7	1.9	2.2	14.4	20.4
2	EDS Unigraphics	1.8	2.0	2.0	3.0	19.3
3	Dassault*	-	1.1	1.5	34.8	14.6
4	SDRC	0.3	1.0	1.1	10.6	10.8
5	Altium*	0.7	0.9	1.1	20.0	10.0
6	Investronica SA	0.8	0.8	0.8	-	8.0
7	MacNeal-Schwendler	1.4	1.1	0.5	-49.2	5.1
8	Autodesk	-	0.1	0.5	558.6	4.5
9	Matra Datavision	0	0.4	0.4	22.2	4.1
10	Cimatron	0	0.1	0.4	249.8	3.8
11	Computervision	1.9	0.8	0.4	-51.0	3.8
12	Ansys	-	0.3	0.4	13.3	3.3
13	Mechanical Dynamics	-	0.3	0.3	20.0	3.1
14	Gerber Systems	-	-	0.3	NA	3.1
15	CAMAX Manufacturing	-	0.1	0.2	110.9	1.8
16	Intergraph	0.1	0.2	0.2	-17.2	1.6
17	Delcam International	-	0.1	0.1	-19.2	1.1
18	Applicon	0.1	0.1	0.1	0.7	0.8
19	B.A.Intelligence Networks	0	0	0.1	66.7	0.7
20	CAD Centre	0.1	0.1	0.1	37.3	0.7
	Other Companies	1.2	0.6	0.4	-24.7	4.0
	All N.A. Companies	7.2	7.9	8.3	5.3	78.3
	All European Companies	1.0	1.5	1.9	23.8	17.7
	All Asian Companies	-	-	-	NA	-
	All Companies	9.4	9.9	10.6	6.4	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-27
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 China Software Companies, AEC, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IEZ	-	1.2	1.3	8.3	37.7
2	Autodesk	-	0.1	0.5	566.1	15.0
3	CAD Centre	0.2	0.3	0.4	37.3	11.7
4	Intergraph	0.2	0.2	0.3	40.3	9.5
5	Rebis	-	-	0.3	NA	7.9
6	IBM	0.2	0.3	0.2	-11.0	6.8
7	Altium*	0.1	0.1	0.1	-19.8	2.2
8	Computervision	0.1	0.1	0.1	-44.1	1.9
9	Dassault*	-	0	0	13.3	0.8
10	Gable CAD Systems	-	-	0	NA	0.3
	Other Companies	0.2	0.3	0.3	20.3	9.2
	All N.A. Companies	0.5	0.7	1.4	104.4	41.2
	All European Companies	0.2	1.5	1.7	14.6	49.6
	All Asian Companies	-	-	-	NA	-
	All Companies	0.8	2.4	3.4	40.6	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-28
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 China Software Companies, GIS/Mapping, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Siemens Nixdorf Info systeme	1.0	0.9	1.7	83.7	33.6
2	ESRI	-	1.7	1.3	-24.8	25.7
3	Intergraph	0.2	0.3	0.5	64.1	10.4
4	PCI Remote Sensing Corp	-	0.1	0.5	336.4	10.1
5	UNISYS	0.1	0.1	0.1	12.3	2.9
6	Autodesk	-	0	0.1	562.9	2.6
7	Terr-Mar Resource Info Svs	-	0.1	0.1	11.4	1.9
8	IBM	0	0.1	0.1	4.3	1.6
	Other Companies	0.6	0.7	0.6	-20.5	11.2
	All N.A. Companies	0.3	2.5	2.8	12.5	55.1
	All European Companies	1.0	0.9	1.7	83.7	33.6
	All Asian Companies	-	-	-	NA	-
	All Companies	2.0	4.1	5.1	22.8	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-29
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 China Software Companies, Electronic Design Automation, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	2.8	1.9	2.4	27.1	64.6
2	Viewlogic Systems	0.2	0.5	0.4	-16.8	11.0
3	Zuken-Redac	0.2	0.7	0.2	-74.0	4.9
4	IBM	0.1	0.1	0.1	0.4	2.8
5	Altium*	0.1	0.1	0.1	0.4	2.8
6	Summitt Design	0	0	0.1	158.9	2.0
7	Autodesk	-	0	0.1	469.4	1.7
8	Intergraph	0.1	0.1	0.1	-16.8	1.6
9	Accel Technologies	-	-	0	NA	1.1
10	ACTEL	0	0	0	2.1	0.8
11	PADS Software	-	-	0	NA	0.3
	Other Companies	0.6	0.4	0.3	-4.5	9.3
	All N.A. Companies	3.3	2.6	3.1	21.6	85.8
	All European Companies	-	-	-	NA	-
	All Asian Companies	0.2	0.7	0.2	-74.0	4.9
	All Companies	4.1	3.6	3.7	0.9	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-30
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 China Software Companies, Electronic CAE, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	1.4	0.8	1.1	34.7	59.2
2	Viewlogic Systems	0.2	0.5	0.4	-16.8	21.3
3	Autodesk	-	0	0.1	469.4	3.2
4	Intergraph	0	0	0	-15.4	1.6
5	ACTEL	0	0	0	2.1	1.6
6	Accel Technologies	-	-	0	NA	0.4
7	PADS Software	-	-	0	NA	0.1
8	Zuken-Redac	0.1	0.5	-	-100.0	-
	Other Companies	0.5	0.3	0.2	-7.8	12.5
	All N.A. Companies	1.6	1.4	1.7	18.8	87.5
	All European Companies	-	-	-	NA	-
	All Asian Companies	0.1	0.5	-	-100.0	-
	All Companies	2.1	2.1	1.9	-9.9	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-31
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 China Software Companies, IC Layout, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	1.2	0.8	1.0	23.0	87.5
2	Summitt Design	0	0	0.1	158.9	6.2
3	Intergraph	0	0	0	-10.7	1.1
	Other Companies	0.1	0.1	0.1	20.5	5.1
	All N.A. Companies	1.3	0.9	1.1	26.8	94.9
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	1.4	0.9	1.2	26.5	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-32
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 China Software Companies, PCB/MCM/Hybrid, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	0.2	0.2	0.2	11.6	37.2
2	Zuken-Redac	0.2	0.2	0.2	-25.4	31.3
3	IBM	0.1	0.1	0.1	0.4	17.7
4	Altium*	0.1	0.1	0.1	0.4	17.7
5	Accel Technologies	-	-	0	NA	5.7
6	Intergraph	0	0	0	-24.5	2.4
7	PADS Software	-	-	0	NA	1.6
	Other Companies	0	0	0	0.3	4.0
	All N.A. Companies	0.3	0.3	0.4	19.3	64.6
	All European Companies	-	-	-	NA	-
	All Asian Companies	0.2	0.2	0.2	-25.4	31.3
	All Companies	0.5	0.6	0.6	-0.1	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-33
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 China Software Companies, All Applications, UNIX

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	2.7	1.9	2.4	27.1	14.7
2	EDS Unigraphics	1.5	1.6	2.0	24.3	12.7
3	IEZ	-	1.2	1.2	2.6	7.6
4	Siemens Nixdorf Info systeme	0.9	0.6	1.2	110.9	7.4
5	Dassault*	-	0.8	1.2	42.8	7.3
6	SDRC	0.3	1.0	1.1	11.7	7.1
7	IBM	0.6	1.0	1.0	0	6.4
8	ESRI	-	1.2	0.9	-26.8	5.7
9	Intergraph	0.5	0.6	0.6	-5.2	3.5
10	CAD Centre	0.3	0.3	0.5	37.3	3.0
11	Computervision	2.0	0.9	0.4	-51.3	2.8
12	Matra Datavision	0	0.3	0.4	23.1	2.6
13	MacNeal-Schwendler	0.6	0.4	0.4	-11.6	2.2
14	Gerber Systems	-	-	0.3	NA	2.0
15	Mechanical Dynamics	-	0.2	0.3	20.6	1.7
16	Ansys	-	0.2	0.2	26.3	1.5
17	Viewlogic Systems	0.1	0.3	0.2	-18.9	1.4
18	PCI Remote Sensing Corp	-	0.1	0.2	202.2	1.4
19	Zuken-Redac	0.2	0.7	0.2	-74.5	1.1
20	Cimatron	0	0.1	0.2	184.6	1.0
21	UNISYS	0.1	0.1	0.1	8.9	0.9
22	Delcam International	-	0.1	0.1	-20.5	0.7
23	CAMAX Manufacturing	-	0.1	0.1	25.2	0.7
24	Applicon	0.1	0.1	0.1	-2.5	0.5
25	Terr-Mar Resource Info Svs	-	0.1	0.1	28.0	0.5
26	Autodesk	-	0	0.1	557.0	0.4
27	Summitt Design	0	0	0.1	158.9	0.4
28	B.A.Intelligence Networks	0	0	0	66.7	0.3
29	Rebis	-	-	0	NA	0.1
30	ACTEL	0	0	0	28.7	0.1
	Other Companies	2.6	1.8	1.5	-13.4	9.6
	All N.A. Companies	8.5	9.9	10.7	8.6	66.9
	All European Companies	1.2	2.6	3.6	35.8	22.3
	All Asian Companies	0.2	0.7	0.2	-74.5	1.1
	All Companies	12.5	15.0	16.1	6.9	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-34
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 China Software Companies, All Applications, NT/Hybrid

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Intergraph	-	-	0.2	NA	60.4
2	IEZ	-	-	0.1	NA	17.5
3 *	ESRI	-	-	0.1	NA	15.3
4	PCI Remote Sensing Corp	-	-	0	NA	6.7
5	PADS Software	-	-	0	NA	0.1
	Other Companies	-	-	-	NA	-
	All N.A. Companies	-	-	0.3	NA	82.5
	All European Companies	-	-	0.1	NA	17.5
	All Asian Companies	-	-	-	NA	-
	All Companies	-	-	0.4	NA	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-35
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 China Software Companies, All Applications, Personal Computer

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	0.8	0.8	1.2	60.8	21.5
2	Altium*	0.8	0.8	1.2	60.8	21.5
3	Autodesk	-	0.2	1.1	557.0	19.2
4	Investronica SA	0.8	0.8	0.8	-	14.6
5	Siemens Nixdorf Info systeme	-	0.1	0.3	149.2	6.0
6	Intergraph	0.1	0.2	0.3	25.5	5.0
7	ESRI	-	0.4	0.3	-31.2	4.9
8	Rebis	-	-	0.3	NA	4.5
9	Cimatron	0	0.1	0.2	310.1	4.3
10	PCI Remote Sensing Corp	-	0	0.2	554.7	4.0
11	Viewlogic Systems	0.1	0.2	0.2	-13.7	3.0
12	Ansys	-	0.1	0.1	13.3	1.3
13	CAMAX Manufacturing	-	-	0.1	NA	1.3
14	Accel Technologies	-	-	0	NA	0.7
15	B.A.Intelligence Networks	0	0	0	66.7	0.5
16	Computervision	-	0	0	-6.3	0.4
17	Terr-Mar Resource Info Svs	-	0	0	-25.3	0.3
18	ACTEL	0	0	0	-11.1	0.3
19	Mechanical Dynamics	-	0	0	16.7	0.2
20	Matra Datavision	-	0	0	-8.1	0.2
21	PADS Software	-	-	0	NA	0.2
22	Delcam International	-	0	0	16.8	0.1
23	UNISYS	-	-	0	NA	0.1
24	Zuken-Redac	-	-	0	NA	0.1
25	Summitt Design	0	0	0	158.9	0.1
26	Applicon	-	-	0	NA	0
27	MacNeal-Schwendler	0	0	-	-100.0	-
	Other Companies	0.5	0.4	0.4	9.6	7.1
	All N.A. Companies	1.0	2.0	3.9	94.8	67.6
	All European Companies	0.9	1.1	1.4	37.4	25.2
	All Asian Companies	-	-	0	NA	0.1
	All Companies	2.4	3.4	5.8	67.9	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-36
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 China Software Companies, All Applications, Host/Proprietary

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Dassault*	-	0.4	0.4	14.8	46.6
2	IBM	0.6	0.5	0.3	-41.5	35.6
3	MacNeal-Schwendler	0.8	0.6	0.2	-71.3	21.3
4	Siemens Nixdorf Info systeme	0.1	0.2	0.2	-23.9	19.8
5	ESRI	-	0.1	0.1	-34.3	6.8
6	Mechanical Dynamics	-	0	0	18.0	5.5
7	Ansys	-	0.1	0	-33.4	4.0
8	PCI Remote Sensing Corp	-	0	0	336.4	3.0
9	EDS Unigraphics	0.3	0.3	-	-100.0	-
10	SDRC	0	0	-	-100.0	-
11	Intergraph	0	0	-	-100.0	-
	Other Companies	0.4	0.1	0	-69.6	3.9
	All N.A. Companies	1.8	1.7	0.7	-61.4	76.2
	All European Companies	0.1	0.2	0.2	-23.9	19.8
	All Asian Companies	-	-	-	NA	-
	All Companies	2.3	2.1	0.9	-57.8	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table B-3
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All China Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Accel Technologies	-	-	0	NA	0.2
2	ACTEL	0	0	0	2.1	0.1
3	Altium*	0.8	1.1	1.2	14.7	5.4
4	Ansys	-	0.3	0.4	13.3	1.5
5	Applicon	0.1	0.1	0.1	0.7	0.4
6	Autodesk	-	0.2	1.2	557.0	5.1
7	B.A.Intelligence Networks	0	0	0.1	66.7	0.3
8	CAD Centre	0.3	0.3	0.5	37.3	2.1
9	Cadence	2.8	1.9	2.4	27.1	10.3
10	CAMAX Manufacturing	-	0.1	0.2	110.9	0.8
11	Cimatron	0	0.1	0.4	249.8	1.8
12	Computervision	2.0	0.9	0.5	-50.1	2.0
13	Dassault*	-	1.2	1.6	34.4	6.8
14	Delcam International	-	0.1	0.1	-19.2	0.5
15	EDS Unigraphics	1.8	2.0	2.0	3.0	8.8
16	ESRI	-	1.7	1.3	-24.8	5.7
17	Gable CAD Systems	-	-	0	NA	0
18	Gerber Systems	-	-	0.3	NA	1.4
19	IBM	2.0	2.3	2.6	10.6	11.2
20	IEZ	-	1.2	1.3	8.3	5.6
21	Intergraph	0.6	0.8	1.1	30.4	4.7
22	Investronica SA	0.8	0.8	0.8	-	3.7
23	MacNeal-Schwendler	1.4	1.1	0.5	-49.2	2.3
24	Matra Datavision	0	0.4	0.4	22.2	1.9
25	Mechanical Dynamics	-	0.3	0.3	20.0	1.4
26	PADS Software	-	-	0	NA	0
27	PCI Remote Sensing Corp	-	0.1	0.5	336.4	2.2
28	Rebis	-	-	0.3	NA	1.2
29	SDRC	0.3	1.0	1.1	10.6	4.9
30	Siemens Nixdorf Info systeme	1.0	0.9	1.7	83.7	7.4
31	Summitt Design	0	0	0.1	158.9	0.3
32	Terr-Mar Resource Info Svs	-	0.1	0.1	11.4	0.4
33	UNISYS	0.1	0.1	0.1	12.3	0.6

(Continued)

Table B-3 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All China Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
34	Viewlogic Systems	0.2	0.5	0.4	-16.8	1.7
35	Zuken-Redac	0.2	0.7	0.2	-74.0	0.8
	Other Companies	3.5	2.3	1.9	-15.6	8.3
	All N.A. Companies	11.4	13.6	15.6	14.7	67.9
	All European Companies	2.2	3.9	5.3	34.5	22.9
	All Asian Companies	0.2	0.7	0.2	-74.0	0.8
	All Companies	17.3	20.5	23.0	12.2	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-37
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Hong Kong Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	1.5	2.0	2.2	10.9	13.5
2	Autodesk	-	1.3	1.8	40.8	10.9
3	Intergraph	1.0	1.4	1.6	20.8	10.2
4	SDRC	0.3	1.4	1.5	11.6	9.5
5	Cadence	1.6	1.1	1.3	27.1	8.4
6	ESRI	-	0.6	1.3	104.4	8.1
7	Altium*	0.8	1.1	1.2	14.7	7.7
8	Investronica SA	0.7	0.7	0.7	-	4.6
9	Computervision	2.6	1.1	0.5	-50.8	3.4
10	Mentor Graphics	0.2	0.2	0.5	185.7	3.1
11	Zycad	0.3	0.7	0.5	-27.3	3.0
12	MacNeal-Schwendler	1.4	1.1	0.5	-58.5	2.9
13	Matra Datavision	0	0.4	0.4	22.2	2.6
14	EDS Unigraphics	0.3	0.3	0.3	3.0	1.9
15	MCS	-	0.2	0.3	8.1	1.6
16	Gerber Systems	-	0.2	0.2	0.6	1.2
17	Vero International Software	-	0.1	0.2	45.3	1.0
18	Cimatron	0	0	0.1	249.8	0.8
19	Delcam International	-	0.1	0.1	115.6	0.7
20	Summitt Design	0	0	0.1	158.9	0.5
21	UNISYS	0	0.1	0.1	46.0	0.5
22	CNC Software	0.1	0.1	0.1	10.1	0.4
23	PADS Software	-	0.1	0.1	-34.5	0.4
24	Zuken-Redac	0.3	0.2	0.1	-72.9	0.4
25	ACTEL	-	0.1	0.1	2.4	0.3
26	CAD-UL	-	0.1	0.1	0.1	0.3
27	MOSS Systems Group	-	0	0	15.3	0.3
28	Accel Technologies	-	-	0	NA	0.3
29	CAMAX Manufacturing	-	0	0	110.9	0.2
30	Graphisoft Group	-	-	0	NA	0.1
	Other Companies	2.8	1.7	1.5	-14.0	9.0
	All N.A. Companies	9.8	11.8	12.9	9.9	80.1
	All European Companies	0.8	1.4	1.7	23.2	10.6
	All Asian Companies	0.3	0.2	0.1	-72.9	0.4
	All Companies	13.8	15.1	16.2	7.2	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-38
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Hong Kong Software Companies, Mechanical, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	1.2	1.5	1.8	15.5	22.0
2	SDRC	0.3	1.4	1.5	11.6	18.8
3	Altium*	0.7	0.9	1.1	20.0	13.0
4	Investronica SA	0.7	0.7	0.7	-	9.1
5	Autodesk	-	0.5	0.7	41.1	8.7
6	Computervision	2.5	1.0	0.5	-51.8	5.8
7	MacNeal-Schwendler	1.4	1.1	0.5	-58.5	5.8
8	Matra Datavision	0	0.4	0.4	22.2	5.3
9	Intergraph	0.3	0.5	0.4	-17.2	4.8
10	EDS Unigraphics	0.3	0.3	0.3	3.0	3.7
11	MCS	-	0.2	0.3	8.1	3.2
12	Gerber Systems	-	0.2	0.2	0.6	2.4
13	Vero International Software	-	0.1	0.2	45.3	2.0
14	Cimatron	0	0	0.1	249.8	1.7
15	Delcam International	-	0.1	0.1	115.6	1.5
16	CNC Software	0.1	0.1	0.1	10.1	0.8
17	CAMAX Manufacturing	-	0	0	110.9	0.4
18	Graphisoft Group	-	-	0	NA	0
	Other Companies	1.0	0.5	0.3	-32.3	4.0
	All N.A. Companies	6.0	6.8	6.2	-8.8	76.5
	All European Companies	0.8	1.3	1.6	22.4	19.6
	All Asian Companies	-	-	-	NA	-
	All Companies	7.8	8.6	8.1	-5.4	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-39
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Hong Kong Software Companies, AEC, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	-	0.5	0.8	42.7	44.8
2	Intergraph	0.3	0.3	0.4	40.3	23.8
3	IBM	0.2	0.3	0.2	-11.0	13.6
4	Computervision	0.1	0.1	0.1	-44.1	4.5
5	Altium*	0.1	0.1	0.1	-19.8	4.4
6	MOSS Systems Group	-	0	0	15.3	2.5
7	Graphisoft Group	-	-	0	NA	1.2
8	Gable CAD Systems	-	-	0	NA	0.3
	Other Companies	0.1	0.1	0.2	28.0	9.3
	All N.A. Companies	0.5	1.2	1.5	21.0	86.7
	All European Companies	-	0	0.1	82.8	4.0
	All Asian Companies	-	-	-	NA	-
	All Companies	0.7	1.4	1.7	23.3	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-40
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Hong Kong Software Companies, GIS/Mapping, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	ESRI	*	0.6	1.3	104.4	46.7
2	Intergraph	0.3	0.4	0.7	64.1	25.2
3	Autodesk	-	0.1	0.2	42.1	7.0
4	UNISYS	0	0.1	0.1	46.0	2.6
5	IBM	0	0.1	0.1	4.3	1.9
	Other Companies	0.6	0.3	0.5	37.0	16.6
	All N.A. Companies	0.4	1.3	2.3	78.5	83.4
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	1.0	1.6	2.8	69.9	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-41
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Hong Kong Software Companies, Electronic Design Automation,
All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	1.6	1.1	1.3	27.1	40.6
2	Mentor Graphics	0.2	0.2	0.5	185.7	15.1
3	Zycad	0.3	0.7	0.5	-27.3	14.3
4	Intergraph	0.1	0.2	0.1	-16.8	4.3
5	IBM	0.1	0.1	0.1	0.4	3.0
6	Altium*	0.1	0.1	0.1	0.4	3.0
7	Autodesk	-	0.1	0.1	22.0	2.8
8	Summitt Design	0	0	0.1	158.9	2.2
9	PADS Software	-	0.1	0.1	-34.5	2.0
10	Zuken-Redac	0.3	0.2	0.1	-72.9	1.8
11	ACTEL	-	0.1	0.1	2.4	1.5
12	CAD-UL	-	0.1	0.1	0.1	1.5
13	Accel Technologies	-	-	0	NA	1.2
14	Intusoft	-	-	0	NA	0.1
	Other Companies	0.5	0.4	0.3	-15.1	9.5
	All N.A. Companies	2.9	2.4	2.9	19.8	87.2
	All European Companies	-	0.1	0.1	0.1	1.5
	All Asian Companies	0.3	0.2	0.1	-72.9	1.8
	All Companies	3.8	3.1	3.3	8.5	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-42
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Hong Kong Software Companies, Electronic CAE, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	0.8	0.5	0.6	34.7	33.7
2	Zycad	0.3	0.7	0.5	-27.3	25.2
3	Mentor Graphics	0.1	0.1	0.3	212.4	16.0
4	Autodesk	-	0.1	0.1	22.0	4.8
5	Intergraph	0	0.1	0.1	-15.4	4.1
6	ACTEL	-	0.1	0.1	2.4	2.7
7	Accel Technologies	-	-	0	NA	0.4
8	PADS Software	-	0	0	-26.8	0.4
9	Intusoft	-	-	0	NA	0.2
10	Zuken-Redac	0.1	0.1	-	-100.0	-
	Other Companies	0.4	0.3	0.2	-11.5	12.5
	All N.A. Companies	1.4	1.5	1.7	14.1	87.5
	All European Companies	-	-	-	NA	-
	All Asian Companies	0.1	0.1	-	-100.0	-
	All Companies	1.9	1.8	1.9	7.0	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-43
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)*
Top 30 Hong Kong Software Companies, IC Layout, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	0.7	0.5	0.6	23.0	80.4
2	Summitt Design	0	0	0.1	158.9	10.0
3	Intergraph	0.1	0	0	-10.7	4.5
	Other Companies	0	0	0	21.5	5.1
	All N.A. Companies	1.2	0.5	0.7	27.8	94.9
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	1.2	0.6	0.7	27.5	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-44
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Hong Kong Software Companies, PCB/MCM/Hybrid, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Mentor Graphics	0.1	0.1	0.2	152.7	28.7
2	Cadence	0.1	0.1	0.1	11.6	17.6
3	IBM	0.1	0.1	0.1	0.4	14.7
4	Altium*	0.1	0.1	0.1	0.4	14.7
5	Zuken-Redac	0.2	0.2	0.1	-64.9	8.6
6	PADS Software	-	0.1	0.1	-35.4	8.4
7	CAD-UL	-	0.1	0.1	0.1	7.2
8	Intergraph	0	0	0	-24.5	5.0
9	Accel Technologies	-	-	0	NA	4.8
	Other Companies	0	0.1	0	-62.8	5.0
	All N.A. Companies	0.3	0.4	0.5	28.9	79.1
	All European Companies	-	0.1	0.1	0.1	7.2
	All Asian Companies	0.2	0.2	0.1	-64.9	8.6
	All Companies	0.6	0.7	0.7	-6.2	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-45
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Hong Kong Software Companies, All Applications, UNIX

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	SDRC	0.3	1.4	1.5	12.8	15.5
2	Cadence	1.6	1.1	1.3	27.1	13.7
3	ESRI	-	0.5	0.9	97.4	9.2
4	Intergraph	0.8	1.0	0.9	-12.0	9.1
5	IBM	0.3	0.8	0.7	-12.0	7.3
6	Computervision	2.6	1.1	0.5	-51.3	5.3
7	Mentor Graphics	0.2	0.2	0.5	183.9	5.0
8	Zycad	0.3	0.7	0.5	-27.3	4.8
9	Matra Datavision	0	0.3	0.4	23.1	4.2
10	MacNeal-Schwendler	0.6	0.4	0.3	-27.8	3.1
11	EDS Unigraphics	0.2	0.2	0.3	24.3	3.0
12	Gerber Systems	-	0.2	0.2	0.6	2.0
13	Delcam International	-	0.1	0.1	112.0	1.2
14	Autodesk	-	0.1	0.1	40.8	1.1
15	MCS	-	0.1	0.1	-37.1	0.8
16	UNISYS	0	0.1	0.1	41.6	0.7
17	Summitt Design	0	0	0.1	158.9	0.7
18	Zuken-Redac	0.3	0.2	0.1	-73.4	0.6
19	Cimatron	0	0	0.1	184.6	0.5
20	MOSS Systems Group	-	0	0	9.2	0.4
21	ACTEL	-	0	0	7.5	0.2
22	CAMAX Manufacturing	-	0	0	25.2	0.2
23	CAD-UL	-	0	0	-24.9	0.1
24	PADS Software	-	0	0	-42.2	0.1
25	Gable CAD Systems	-	-	0	NA	0
26	Altium*	-	0.3	-	-100.0	-
	Other Companies	2.1	1.3	1.1	-12.3	11.1
	All N.A. Companies	7.5	7.8	8.1	3.4	81.8
	All European Companies	0.1	0.5	0.6	38.9	6.5
	All Asian Companies	0.3	0.2	0.1	-73.4	0.6
	All Companies	9.9	9.7	9.9	1.3	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-46
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Hong Kong Software Companies, All Applications, NT/Hybrid

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Intergraph	-	-	0.3	NA	83.5
2	ESRI	-	-	0.1	NA	14.3
3	Mentor Graphics	-	-	0	NA	1.0
4	PADS Software	-	-	0	NA	0.6
5	Intusoft	-	-	0	NA	0.6
	Other Companies	-	-	-	NA	-
	All N.A. Companies	-	-	0.4	NA	100.0
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	-	-	0.4	NA	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-47
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Hong Kong Software Companies, All Applications, Personal Computer

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	-	1.2	1.7	40.8	30.3
2	IBM	0.8	0.8	1.2	60.8	22.6
3	Altium*	0.8	0.8	1.2	60.8	22.6
4	Investronica SA	0.7	0.7	0.7	-	13.5
5	Intergraph	0.1	0.3	0.4	24.3	7.4
6	ESRI	-	0.2	0.3	88.1	5.2
7	MCS	-	0.1	0.2	57.1	3.3
8	Vero International Software	-	0.1	0.2	45.3	3.0
9	Cimatron	0	0	0.1	310.1	1.5
10	CNC Software	0.1	0.1	0.1	10.1	1.2
11	PADS Software	-	0.1	0.1	-36.5	1.0
12	CAD-UL	-	0	0	6.4	0.8
13	Accel Technologies	-	-	0	NA	0.7
14	ACTEL	-	0	0	-1.0	0.5
15	Computervision	-	0	0	-39.3	0.5
16	Graphisoft Group	-	-	0	NA	0.4
17	CAMAX Manufacturing	-	-	0	NA	0.2
18	Matra Datavision	-	0	0	-8.1	0.2
19	Delcam International	-	0	0	211.4	0.1
20	Mentor Graphics	0	0	0	149.8	0.1
21	MOSS Systems Group	-	0	0	130.6	0.1
22	Summitt Design	0	0	0	158.9	0.1
23	UNISYS	-	-	0	NA	0
24	Intusoft	-	-	0	NA	0
25	Zuken-Redac	-	-	0	NA	0
26	MacNeal-Schwendler	0	0	-	-100.0	-
	Other Companies	0.5	0.4	0.4	-7.9	7.1
	All N.A. Companies	1.0	2.8	4.0	44.1	73.3
	All European Companies	0.8	0.9	1.1	15.5	19.6
	All Asian Companies	-	-	0	NA	0
	All Companies	2.3	4.1	5.5	32.4	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-48
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Hong Kong Software Companies, All Applications, Host/Proprietary

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	0.3	0.4	0.2	-41.4	48.8
2	MacNeal-Schwendler	0.8	0.7	0.2	-76.5	36.2
3	ESRI	-	0	0.1	97.0	13.2
4	EDS Unigraphics	0	0	-	-100.0	-
5	Intergraph	0	0	-	-100.0	-
6	SDRC	0	0	-	-100.0	-
	Other Companies	0.2	0	0	-82.0	1.8
	All N.A. Companies	1.3	1.2	0.4	-62.6	98.2
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	1.5	1.2	0.4	-63.3	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table B-4
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Hong Kong Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Accel Technologies	-	-	0	NA	0.3
2	ACTEL	-	0.1	0.1	2.4	0.3
3	Altium*	0.8	1.1	1.2	14.7	7.7
4	Autodesk	-	1.3	1.8	40.8	10.9
5	CAD-UL	-	0.1	0.1	0.1	0.3
6	Cadence	1.6	1.1	1.3	27.1	8.4
7	CAMAX Manufacturing	-	0	0	110.9	0.2
8	Cimatron	0	0	0.1	249.8	0.8
9	CNC Software	0.1	0.1	0.1	10.1	0.4
10	Computervision	2.6	1.1	0.5	-50.8	3.4
11	Delcam International	-	0.1	0.1	115.6	0.7
12	EDS Unigraphics	0.3	0.3	0.3	3.0	1.9
13	ESRI	-	0.6	1.3	104.4	8.1
14	Gable CAD Systems	-	-	0	NA	0
15	Gerber Systems	-	0.2	0.2	0.6	1.2
16	Graphisoft Group	-	-	0	NA	0.1
17	IBM	1.5	2.0	2.2	10.9	13.5
18	Intergraph	1.0	1.4	1.6	20.8	10.2
19	Intusoft	-	-	0	NA	0
20	Investronica SA	0.7	0.7	0.7	-	4.6
21	MacNeal-Schwendler	1.4	1.1	0.5	-58.5	2.9
22	Matra Datavision	0	0.4	0.4	22.2	2.6
23	MCS	-	0.2	0.3	8.1	1.6
24	Mentor Graphics	0.2	0.2	0.5	185.7	3.1
25	MOSS Systems Group	-	0	0	15.3	0.3
26	PADS Software	-	0.1	0.1	-34.5	0.4
27	SDRC	0.3	1.4	1.5	11.6	9.5
28	Summitt Design	0	0	0.1	158.9	0.5
29	UNISYS	0	0.1	0.1	46.0	0.5
30	Vero International Software	-	0.1	0.2	45.3	1.0
31	Zuken-Redac	0.3	0.2	0.1	-72.9	0.4
32	Zycad	0.3	0.7	0.5	-27.3	3.0
	Other Companies	2.8	1.7	1.5	-14.0	9.0
	All N.A. Companies	9.8	11.8	12.9	9.9	80.1
	All European Companies	0.8	1.4	1.7	23.2	10.6
	All Asian Companies	0.3	0.2	0.1	-72.9	0.4
	All Companies	13.8	15.1	16.2	7.2	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-49
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Korea Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	13.1	8.8	11.1	27.1	17.4
2	Autodesk	1.8	7.7	10.3	33.7	16.0
3	Dassault*	-	5.8	7.9	34.4	12.2
4	COMPASS Design Automation	0.4	4.6	4.9	4.7	7.6
5	Mentor Graphics	2.5	3.5	4.9	39.5	7.6
6	IBM	2.6	3.0	3.3	9.6	5.2
7	Zuken-Redac	1.0	3.1	2.3	-24.9	3.6
8	Intergraph	1.3	1.8	2.3	30.7	3.6
9	SDRC	0.6	1.7	1.9	10.8	3.0
10	Design Automation	0.2	1.0	1.4	47.9	2.2
11	ESRI	-	1.2	1.3	10.0	2.0
12	ARCSYS	-	0.3	1.2	292.1	1.9
13	Altium*	0.8	1.1	1.2	14.7	1.9
14	CrossCheck Technology	-	0.5	1.1	127.7	1.7
15	Straessle Informationssysteme	-	-	0.9	NA	1.5
16	Delcam International	-	0.7	0.7	4.9	1.1
17	EA Systems	0.4	0.6	0.7	13.3	1.1
18	Yokogawa Digital Computer	-	0.4	0.6	74.3	1.0
19	ADRA Systems	-	0.5	0.6	11.5	1.0
20	Silicon Valley Research	-	0.4	0.6	66.1	0.9
21	Computervision	2.3	1.1	0.5	-50.6	0.9
22	EDS Unigraphics	0.4	0.5	0.5	3.0	0.8
23	Viewlogic Systems	0.2	0.6	0.5	-16.8	0.8
24	Zycad	0.3	0.7	0.5	-27.3	0.7
25	Quickturn Design Systems	-	0.8	0.4	-47.2	0.7
26	Summitt Design	0.2	0.2	0.4	158.9	0.7
27	Matra Datavision	0	0.4	0.4	22.2	0.7
28	Tebis	-	0.2	0.4	114.3	0.6
29	Investronica SA	0.4	0.4	0.4	-	0.6
30	Ansys	-	0.3	0.4	13.3	0.6
	Other Companies	7.3	5.4	5.5	1.7	8.6
	All N.A. Companies	26.5	40.2	50.3	25.1	78.5
	All European Companies	0.7	2.0	3.8	85.7	5.9
	All Asian Companies	1.2	4.5	4.5	-1.2	7.0
	All Companies	35.7	52.3	64.1	22.7	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-50
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Korea Software Companies, Mechanical, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Dassault*	-	5.7	7.7	34.8	45.4
2	Autodesk	0.7	3.1	4.1	34.0	24.3
3	IBM	2.3	2.4	2.8	13.3	16.3
4	SDRC	0.6	1.7	1.9	10.8	11.2
5	Altium*	0.7	0.9	1.1	20.0	6.2
6	Straessle Informationssysteme	-	-	0.9	NA	5.5
7	Design Automation	0.2	0.7	0.8	9.9	4.6
8	Delcam International	-	0.7	0.7	4.9	4.3
9	ADRA Systems	-	0.5	0.6	11.5	3.6
10	EDS Unigraphics	0.4	0.5	0.5	3.0	3.0
11	Computervision	2.2	1.0	0.5	-51.5	2.8
12	Matra Datavision	0	0.4	0.4	22.2	2.5
13	Tebis	-	0.2	0.4	114.3	2.4
14	Intergraph	0.3	0.5	0.4	-17.2	2.3
15	Investronica SA	0.4	0.4	0.4	-	2.2
16	Ansys	-	0.3	0.4	13.3	2.1
17	Mechanical Dynamics	-	0.3	0.3	20.0	1.9
18	CAMAX Manufacturing	-	0.1	0.3	110.9	1.7
19	Cimatron	0	0.1	0.3	249.8	1.6
20	Applicon	0.1	0.2	0.2	17.2	1.2
21	Gerber Systems	-	-	0.1	NA	0.8
22	Toshiba Engineering*	0.1	0.1	0.1	-7.7	0.7
23	CNC Software	0.1	0.1	0.1	10.1	0.4
24	Concentra	0.1	0	0.1	24.0	0.3
25	Framasoft	-	0.1	0	-20.6	0.3
26	DP Technology	0	0	0	13.5	0.2
27	Livermore Software Tech.	-	0	0	95.0	0.1
28	Graphisoft Group	-	-	0	NA	0
	Other Companies	1.0	0.7	0.6	-11.2	3.8
	All N.A. Companies	6.7	10.8	12.3	13.9	72.1
	All European Companies	0.5	1.8	3.2	82.5	18.8
	All Asian Companies	0.3	0.8	0.9	7.2	5.2
	All Companies	8.4	14.1	17.0	20.7	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-51
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Korea Software Companies, AEC, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	0.8	3.3	4.5	35.5	54.5
2	EA Systems	0.4	0.6	0.7	13.3	8.3
3	Design Automation	0	0.3	0.6	156.0	7.8
4	Intergraph	0.4	0.4	0.6	40.3	6.9
5	IBM	0.2	0.4	0.4	-9.3	4.4
6	CAD Centre	0.2	0.2	0.3	37.3	3.9
7	Rebis	-	-	0.2	NA	2.2
8	Eagle Point	-	0.1	0.2	85.6	1.8
9	Dassault*	-	0.1	0.1	13.3	1.8
10	Computervision	0.1	0.1	0.1	-44.1	0.9
11	Altium*	0.1	0.1	0.1	-19.8	0.9
12	MOSS Systems Group	-	0	0	15.3	0.5
13	Graphisoft Group	-	-	0	NA	0.3
	Other Companies	0.5	0.5	0.7	36.9	8.6
	All N.A. Companies	1.9	4.9	6.5	31.9	79.0
	All European Companies	0.2	0.3	0.4	42.1	4.7
	All Asian Companies	0	0.3	0.6	156.0	7.8
	All Companies	2.7	6.0	8.2	38.0	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-52
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Korea Software Companies, GIS/Mapping, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	ESRI	-	1.2	1.3	10.0	27.5
2	Intergraph	0.5	0.8	1.2	64.1	26.0
3	Autodesk	0.2	0.8	1.1	34.9	24.0
4	Laser-Scan	-	-	0.2	NA	4.0
5	IBM	0	0.1	0.1	4.3	2.2
6	Eagle Point	-	-	0	NA	0.2
	Other Companies	1.3	0.8	0.8	1.1	16.0
	All N.A. Companies	0.8	2.9	3.8	31.4	80.0
	All European Companies	-	-	0.2	NA	4.0
	All Asian Companies	-	-	-	NA	-
	All Companies	2.0	3.6	4.8	30.4	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-53
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Korea Software Companies, Electronic Design Automation,
All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	13.1	8.8	11.1	27.1	33.0
2	COMPASS Design Automation	0.4	4.6	4.9	4.7	14.4
3	Mentor Graphics	2.5	3.5	4.9	39.5	14.4
4	Zuken-Redac	0.9	3.1	2.3	-24.9	6.9
5	ARCSYS	-	0.3	1.2	292.1	3.7
6	CrossCheck Technology	-	0.5	1.1	127.7	3.3
7	Yokogawa Digital Computer	-	0.4	0.6	74.3	1.9
8	Silicon Valley Research	-	0.4	0.6	66.1	1.7
9	Autodesk	0.1	0.5	0.5	15.9	1.6
10	Viewlogic Systems	0.2	0.6	0.5	-16.8	1.4
11	Zycad	0.3	0.7	0.5	-27.3	1.4
12	Quickturn Design Systems	-	0.8	0.4	-47.2	1.3
13	Summitt Design	0.2	0.2	0.4	158.9	1.3
14	PADS Software	-	0.2	0.4	82.6	1.1
15	Integrated Silicon Systems	-	0.2	0.3	78.5	1.0
16	VLSI Libraries	-	-	0.3	NA	0.8
17	Seiko*	0.3	0.2	0.2	11.1	0.6
18	Intergraph	0.1	0.1	0.1	-16.8	0.3
19	APTIX	-	0.1	0.1	35.3	0.3
20	IBM	0.1	0.1	0.1	0.4	0.3
21	Altium*	0.1	0.1	0.1	0.4	0.3
22	Royal Digital Centers	-	0.1	0.1	27.5	0.3
23	Accel Technologies	-	-	0.1	NA	0.2
24	SIMUCAD	-	0.1	0.1	34.4	0.2
25	i-Logix	-	0	0	3.7	0.1
26	ACTEL	0.1	0.1	0	-38.7	0.1
27	ULTImate Technology	0	0	0	-6.6	0.1
28	InterHDL	-	-	0	NA	0
29	Intusoft	-	-	0	NA	0
	Other Companies	3.2	3.0	3.0	0.2	8.9
	All N.A. Companies	17.1	21.7	27.8	28.3	82.3
	All European Companies	0	0	0	-6.6	0.1
	All Asian Companies	0.9	3.5	3.0	-14.5	8.8
	All Companies	21.3	28.1	33.8	20.0	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-54
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Korea Software Companies, Electronic CAE, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	6.4	3.9	5.3	34.7	33.4
2	Mentor Graphics	1.6	2.3	3.2	39.8	20.3
3	COMPASS Design Automation	0.2	1.9	1.6	-16.2	10.3
4	CrossCheck Technology	-	0.5	1.1	127.7	7.0
5	Autodesk	0.1	0.5	0.5	15.9	3.4
6	Viewlogic Systems	0.2	0.6	0.5	-16.8	3.1
7	Zycad	0.3	0.7	0.5	-27.3	3.0
8	Quickturn Design Systems	-	0.8	0.4	-47.2	2.8
9	VLSI Libraries	-	-	0.3	NA	1.7
10	Seiko*	0.3	0.2	0.2	11.1	1.3
11	APTIX	-	0.1	0.1	35.3	0.7
12	SIMUCAD	-	0.1	0.1	34.4	0.5
13	Intergraph	0	0.1	0.1	-15.4	0.4
14	PADS Software	-	0	0	104.2	0.3
15	i-Logix	-	0	0	3.7	0.2
16	ACTEL	0.1	0.1	0	-38.7	0.2
17	Accel Technologies	-	-	0	NA	0.1
18	InterHDL	-	-	0	NA	0
19	Intusoft	-	-	0	NA	0
20	Zuken-Redac	0.3	1.7	-	-100.0	-
	Other Companies	2.6	2.1	2.0	-6.7	12.5
	All N.A. Companies	8.8	11.5	13.8	20.2	87.5
	All European Companies	-	-	-	NA	-
	All Asian Companies	0.3	1.7	-	-100.0	-
	All Companies	11.6	15.4	15.8	2.9	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-55
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Korea Software Companies, IC Layout, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	5.8	3.9	4.8	23.0	40.0
2	COMPASS Design Automation	0.2	2.7	3.2	19.8	26.7
3	ARCSYS	-	0.3	1.2	292.1	10.3
4	Mentor Graphics	0.5	0.6	0.8	33.7	6.6
5	Silicon Valley Research	-	0.4	0.6	66.1	4.8
6	Summitt Design	0.2	0.2	0.4	158.9	3.6
7	Integrated Silicon Systems	-	0.2	0.3	78.5	2.6
8	Intergraph	0.1	0	0	-10.7	0.2
	Other Companies	0.3	0.5	0.6	31.9	5.1
	All N.A. Companies	6.8	8.3	11.5	38.8	94.9
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	7.1	8.8	12.1	38.4	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-56
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Korea Software Companies, PCB/MCM/Hybrid, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Zuken-Redac	0.7	1.4	2.3	71.3	41.6
2	Cadence	1.0	0.9	1.0	11.6	17.9
3	Mentor Graphics	0.4	0.6	0.9	44.1	15.3
4	Yokogawa Digital Computer	-	0.4	0.6	74.3	11.2
5	PADS Software	-	0.2	0.3	80.2	5.8
6	IBM	0.1	0.1	0.1	0.4	1.8
7	Altium*	0.1	0.1	0.1	0.4	1.8
8	Royal Digital Centers	-	0.1	0.1	27.5	1.6
9	Accel Technologies	-	-	0.1	NA	1.2
10	Intergraph	0	0	0	-24.5	0.5
11	ULTImate Technology	0	0	0	-6.6	0.3
	Other Companies	0.2	0.2	0.2	-6.0	2.8
	All N.A. Companies	1.5	1.9	2.5	31.2	44.1
	All European Companies	0	0	0	-6.6	0.3
	All Asian Companies	0.7	1.7	3.0	71.9	52.8
	All Companies	2.4	3.8	5.6	47.9	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-57
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Korea Software Companies, All Applications, UNIX

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	12.9	8.8	11.1	27.1	24.4
2	Dassault*	-	4.1	5.8	42.8	12.8
3	COMPASS Design Automation	0.4	4.6	4.9	4.7	10.6
4	Mentor Graphics	2.5	3.4	4.8	38.7	10.4
5	Zuken-Redac	1.0	3.1	2.3	-26.4	5.0
6	SDRC	0.6	1.7	1.9	11.9	4.2
7	IBM	0.9	1.4	1.6	11.9	3.5
8	ARCSYS	-	0.3	1.2	292.1	2.7
9	Intergraph	1.1	1.3	1.2	-4.9	2.6
10	CrossCheck Technology	-	0.5	1.1	127.7	2.4
11	Straessle Informationssysteme	-	-	0.9	NA	2.0
12	ESRI	-	0.9	0.9	6.8	2.0
13	Delcam International	-	0.7	0.7	3.1	1.5
14	Yokogawa Digital Computer	-	0.4	0.6	74.3	1.4
15	Autodesk	0.1	0.5	0.6	33.7	1.4
16	Silicon Valley Research	-	0.4	0.6	66.1	1.3
17	Computervision	2.3	1.1	0.5	-51.3	1.1
18	EDS Unigraphics	0.4	0.4	0.5	24.3	1.1
19	Zycad	0.3	0.7	0.5	-27.3	1.0
20	Quickturn Design Systems	-	0.8	0.4	-47.2	1.0
21	ADRA Systems	-	0.4	0.4	11.5	1.0
22	Summitt Design	0.2	0.2	0.4	158.9	0.9
23	Matra Datavision	0	0.3	0.4	23.1	0.9
24	CAD Centre	0.2	0.2	0.3	37.3	0.7
25	Integrated Silicon Systems	-	0.2	0.3	78.4	0.7
26	Viewlogic Systems	0.1	0.3	0.3	-18.9	0.6
27	VLSI Libraries	-	-	0.3	NA	0.6
28	Mechanical Dynamics	-	0.2	0.3	20.6	0.6
29	Ansys	-	0.2	0.2	26.3	0.5
30	Applicon	0.1	0.2	0.2	13.5	0.4
	Other Companies	6.1	4.6	4.8	3.4	10.5
	All N.A. Companies	21.8	29.0	35.1	21.0	76.8
	All European Companies	0.3	1.4	2.8	104.1	6.1
	All Asian Companies	1.0	3.6	3.0	-15.6	6.6
	All Companies	29.3	38.5	45.7	18.4	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-58
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Korea Software Companies, All Applications, NT/Hybrid

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Intergraph	-	-	0.5	NA	51.3
2	EA Systems	-	-	0.3	NA	35.8
3	ESRI	-	-	0.1	NA	6.2
4	Mentor Graphics	-	-	0	NA	4.5
5	PADS Software	-	-	0	NA	1.5
6	Intusoft	-	-	0	NA	0.4
7	SIMUCAD	-	0	0	102.5	0.2
8	InterHDL	-	-	0	NA	0
	Other Companies	-	0	-	-100.0	-
	All N.A. Companies	-	0	0.9	97,790.3	100.0
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	-	0	0.9	4,986.5	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-59
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Korea Software Companies, All Applications, Personal Computer

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	1.7	7.2	9.7	33.7	57.0
2	Design Automation	0.2	1.0	1.4	47.9	8.4
3	IBM	0.8	0.8	1.2	60.8	7.3
4	Altium*	0.8	0.8	1.2	60.8	7.3
5	Intergraph	0.2	0.5	0.6	28.5	3.6
6	Investronica SA	0.4	0.4	0.4	-	2.2
7	Tebis	-	0.2	0.4	92.3	2.2
8	PADS Software	-	0.2	0.3	77.1	1.8
9	ESRI	-	0.3	0.3	0.8	1.7
10	Viewlogic Systems	0.1	0.2	0.2	-13.7	1.2
11	ADRA Systems	-	0.2	0.2	11.5	1.0
12	Rebis	-	-	0.2	NA	1.0
13	Cimatron	0	0	0.2	310.1	1.0
14	Eagle Point	-	0.1	0.1	75.8	0.8
15	CAMAX Manufacturing	-	-	0.1	NA	0.7
16	Accel Technologies	-	-	0.1	NA	0.5
17	Ansys	-	0.1	0.1	13.3	0.5
18	CNC Software	0.1	0.1	0.1	10.1	0.4
19	Mentor Graphics	0	0.1	0.1	11.8	0.4
20	APTIX	-	0	0.1	32.6	0.3
21	Zuken-Redac	-	-	0	NA	0.3
22	Delcam International	-	0	0	51.5	0.2
23	Computervision	-	0	0	-31.7	0.2
24	SIMUCAD	-	0	0	15.3	0.2
25	Graphisoft Group	-	-	0	NA	0.1
26	Summitt Design	0	0	0	158.9	0.1
27	ULTImate Technology	0	0	0	-6.6	0.1
28	ACTEL	0.1	0	0	-40.8	0.1
29	DP Technology	0	0	0	13.5	0.1
30	Mechanical Dynamics	-	0	0	16.7	0.1
	Other Companies	0.9	1.0	1.1	8.8	6.4
	All N.A. Companies	2.9	9.8	13.4	37.2	79.1
	All European Companies	0.4	0.7	1.0	50.4	5.9
	All Asian Companies	0.2	1.0	1.5	52.7	8.6
	All Companies	4.5	12.4	17.0	36.9	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-60
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Korea Software Companies, All Applications, Host/Proprietary

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Dassault*	-	1.8	2.0	14.8	220.9
2	IBM	0.9	0.8	0.5	-42.0	52.2
3	EA Systems	0.4	0.4	0.3	-29.2	29.6
4	ESRI	-	0.1	0.1	-1.5	6.4
5	Mechanical Dynamics	-	0	0	18.0	5.2
6	Ansys	-	0.1	0	-33.4	4.0
7	Framasoft	-	0	0	-56.2	0.5
8	SIMUCAD	-	0	0	21.5	0.3
9	EDS Unigraphics	0.1	0.1	-	-100.0	-
10	Intergraph	0	0	-	-100.0	-
11	SDRC	0	0	-	-100.0	-
	Other Companies	0.3	0.1	0	-71.0	1.9
	All N.A. Companies	1.7	1.5	0.9	-39.7	97.7
	All European Companies	-	0	0	-56.2	0.5
	All Asian Companies	-	-	-	NA	-
	All Companies	2.1	1.6	0.9	-41.0	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table B-5
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Korea Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Accel Technologies	-	-	0.1	NA	0.1
2	ACTEL	0.1	0.1	0	-38.7	0
3	ADRA Systems	-	0.5	0.6	11.5	1.0
4	Altium*	0.8	1.1	1.2	14.7	1.9
5	Ansys	-	0.3	0.4	13.3	0.6
6	Applicon	0.1	0.2	0.2	17.2	0.3
7	APTIX	-	0.1	0.1	35.3	0.2
8	ARCSYS	-	0.3	1.2	292.1	1.9
9	Autodesk	1.8	7.7	10.3	33.7	16.0
10	CAD Centre	0.2	0.2	0.3	37.3	0.5
11	Cadence	13.1	8.8	11.1	27.1	17.4
12	CAMAX Manufacturing	-	0.1	0.3	110.9	0.5
13	Cimatron	0	0.1	0.3	249.8	0.4
14	CNC Software	0.1	0.1	0.1	10.1	0.1
15	COMPASS Design Automation	0.4	4.6	4.9	4.7	7.6
16	Computervision	2.3	1.1	0.5	-50.6	0.9
17	Concentra	0.1	0	0.1	24.0	0.1
18	CrossCheck Technology	-	0.5	1.1	127.7	1.7
19	Dassault*	-	5.8	7.9	34.4	12.2
20	Delcam International	-	0.7	0.7	4.9	1.1
21	Design Automation	0.2	1.0	1.4	47.9	2.2
22	DP Technology	0	0	0	13.5	0.1
23	EA Systems	0.4	0.6	0.7	13.3	1.1
24	Eagle Point	-	0.1	0.2	95.4	0.2
25	EDS Unigraphics	0.4	0.5	0.5	3.0	0.8
26	ESRI	-	1.2	1.3	10.0	2.0
27	Framasoft	-	0.1	0	-20.6	0.1
28	Gerber Systems	-	-	0.1	NA	0.2
29	Graphisoft Group	-	-	0	NA	0
30	i-Logix	-	0	0	3.7	0.1
31	IBM	2.6	3.0	3.3	9.6	5.2
32	Integrated Silicon Systems	-	0.2	0.3	78.5	0.5
33	Intergraph	1.3	1.8	2.3	30.7	3.6
34	InterHDL	-	-	0	NA	0
35	Intusoft	-	-	0	NA	0
36	Investronica SA	0.4	0.4	0.4	-	0.6
37	Laser-Scan	-	-	0.2	NA	0.3

(Continued)

Table B-5 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Korea Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
38	Livermore Software Tech.	-	0	0	95.0	0
39	Matra Datavision	0	0.4	0.4	22.2	0.7
40	Mechanical Dynamics	-	0.3	0.3	20.0	0.5
41	Mentor Graphics	2.5	3.5	4.9	39.5	7.6
42	MOSS Systems Group	-	0	0	15.3	0.1
43	PADS Software	-	0.2	0.4	82.6	0.6
44	Quickturn Design Systems	-	0.8	0.4	-47.2	0.7
45	Rebis	-	-	0.2	NA	0.3
46	Royal Digital Centers	-	0.1	0.1	27.5	0.1
47	SDRC	0.6	1.7	1.9	10.8	3.0
48	Seiko*	0.3	0.2	0.2	11.1	0.3
49	Silicon Valley Research	-	0.4	0.6	66.1	0.9
50	SIMUCAD	-	0.1	0.1	34.4	0.1
51	Straessle Informationssysteme	-	-	0.9	NA	1.5
52	Summitt Design	0.2	0.2	0.4	158.9	0.7
53	Tebis	-	0.2	0.4	114.3	0.6
54	Toshiba Engineering*	0.1	0.1	0.1	-7.7	0.2
55	ULTImate Technology	0	0	0	-6.6	0
56	Viewlogic Systems	0.2	0.6	0.5	-16.8	0.8
57	VLSI Libraries	-	-	0.3	NA	0.4
58	Yokogawa Digital Computer	-	0.4	0.6	74.3	1.0
59	Zuken-Redac	1.0	3.1	2.3	-24.9	3.6
60	Zycad	0.3	0.7	0.5	-27.3	0.7
	Other Companies	7.3	5.4	5.5	1.7	8.6
	All N.A. Companies	26.5	40.2	50.3	25.1	78.5
	All European Companies	0.7	2.0	3.8	85.7	5.9
	All Asian Companies	1.2	4.5	4.5	-1.2	7.0
	All Companies	35.7	52.3	64.1	22.7	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-61
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Singapore Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Siemens Nixdorf Info systeme	2.4	2.2	4.0	83.7	17.0
2	ESRI	-	2.7	2.6	-3.4	11.2
3	EDS Unigraphics	2.2	2.5	2.5	3.0	10.8
4	IBM	1.5	1.8	2.0	11.7	8.4
5	SDRC	0.3	1.7	1.9	10.8	8.1
6	Altium*	0.8	1.1	1.2	14.7	5.3
7	Autodesk	-	1.0	1.2	23.2	5.0
8	Mentor Graphics	3.2	2.2	1.1	-48.6	4.8
9	IEZ	-	0.3	0.7	141.5	3.1
10	Intergraph	0.4	0.5	0.6	32.4	2.8
11	Delcam International	-	0.1	0.6	438.9	2.6
12	Zuken-Redac	0.4	0.5	0.5	-0.5	2.3
13	Zycad	0.3	0.7	0.5	-27.3	2.0
14	Matra Datavision	0	0.4	0.4	22.2	1.8
15	Investronica SA	0.4	0.4	0.4	-	1.8
16	Viewlogic Systems	0.2	0.5	0.4	-16.8	1.7
17	Summitt Design	0.2	0.1	0.4	158.9	1.6
18	Norlinvest Ltd.	0.2	0.2	0.3	40.9	1.3
19	Computervision	1.0	0.5	0.2	-50.4	1.0
20	Graphisoft Group	-	0.1	0.2	225.3	1.0
21	B.A.Intelligence Networks	0.1	0.1	0.2	66.7	0.7
22	Cimatron	0	0	0.1	249.8	0.6
23	CAMAX Manufacturing	-	0.1	0.1	110.9	0.6
24	Ansys	-	0.1	0.1	13.3	0.3
25	CNC Software	0.1	0.1	0.1	10.1	0.3
26	Concentra	0.1	0	0.1	24.0	0.2
27	CAD-UL	-	0.1	0.1	0.1	0.2
28	Accel Technologies	-	-	0	NA	0.2
29	DP Technology	0	0	0	13.5	0.1
30	Vero International Software	-	0	0	45.3	0.1
	Other Companies	3.3	2.4	1.8	-22.0	7.8
	All N.A. Companies	10.0	14.4	14.1	-2.3	60.2
	All European Companies	3.1	3.8	6.9	83.9	29.7
	All Asian Companies	0.4	0.5	0.5	-0.5	2.3
	All Companies	16.8	21.1	23.4	11.0	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-62
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Singapore Software Companies, Mechanical, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	EDS Unigraphics	2.2	2.5	2.5	3.0	26.8
2	SDRC	0.3	1.7	1.9	10.8	20.1
3	IBM	1.2	1.4	1.7	16.0	17.7
4	Altium*	0.7	0.9	1.1	20.0	11.2
5	Delcam International	-	0.1	0.6	438.9	6.4
6	Autodesk	-	0.4	0.5	23.5	5.0
7	Matra Datavision	0	0.4	0.4	22.2	4.5
8	Investronica SA	0.4	0.4	0.4	-	4.4
9	Computervision	0.9	0.4	0.2	-51.3	2.1
10	B.A.Intelligence Networks	0.1	0.1	0.2	66.7	1.7
11	Cimatron	0	0	0.1	249.8	1.4
12	Intergraph	0.1	0.2	0.1	-17.2	1.4
13	CAMAX Manufacturing	-	0.1	0.1	110.9	1.4
14	Ansys	-	0.1	0.1	13.3	0.8
15	CNC Software	0.1	0.1	0.1	10.1	0.7
16	Concentra	0.1	0	0.1	24.0	0.5
17	DP Technology	0	0	0	13.5	0.4
18	Vero International Software	-	0	0	45.3	0.3
19	Applicon	0.1	0	0	0.7	0.3
20	Graphisoft Group	-	0	0	209.8	0
	Other Companies	0.8	0.4	0.4	-16.7	3.9
	All N.A. Companies	5.1	6.9	7.4	7.2	78.8
	All European Companies	0.5	0.9	1.6	71.9	17.2
	All Asian Companies	-	-	-	NA	-
	All Companies	6.3	8.3	9.4	13.2	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-63
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Singapore Software Companies, AEC, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IEZ	-	0.3	0.7	141.5	36.0
2	Autodesk	-	0.4	0.5	24.9	25.5
3	Graphisoft Group	-	0.1	0.2	225.7	11.2
4	IBM	0.2	0.2	0.2	-12.7	8.5
5	Intergraph	0.1	0.1	0.2	40.3	8.1
6	Altium*	0.1	0.1	0.1	-19.8	3.8
7	Computervision	0	0.1	0	-44.1	1.6
	Other Companies	0.1	0.1	0.2	48.9	9.2
	All N.A. Companies	0.3	0.8	0.9	12.6	43.7
	All European Companies	-	0.4	0.9	157.3	47.2
	All Asian Companies	-	-	-	NA	-
	All Companies	0.4	1.3	2.0	58.1	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-64
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Singapore Software Companies, GIS/Mapping, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Siemens Nixdorf Info systeme	2.4	2.2	4.0	83.7	51.3
2	ESRI	-	2.7	2.6	-3.4	33.6
3	Intergraph	0.1	0.2	0.4	64.1	4.5
4	Autodesk	-	0.1	0.1	24.3	1.7
5	IBM	0	0	0	4.3	0.4
	Other Companies	0.4	1.0	0.7	-32.0	8.4
	All N.A. Companies	0.2	3.1	3.1	2.3	40.3
	All European Companies	2.4	2.2	4.0	83.7	51.3
	All Asian Companies	-	-	-	NA	-
	All Companies	3.0	6.2	7.8	25.6	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-65
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Singapore Software Companies, Electronic Design Automation, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Mentor Graphics	3.2	2.2	1.1	-48.6	28.9
2	Zuken-Redac	0.4	0.5	0.5	-0.5	13.9
3	Zycad	0.3	0.7	0.5	-27.3	12.3
4	Viewlogic Systems	0.2	0.5	0.4	-16.8	10.4
5	Summitt Design	0.2	0.1	0.4	158.9	9.4
6	Norlinvest Ltd.	0.2	0.2	0.3	40.9	8.0
7	IBM	0.1	0.1	0.1	0.4	2.6
8	Altium*	0.1	0.1	0.1	0.4	2.6
9	Autodesk	-	0.1	0.1	6.8	1.6
10	CAD-UL	-	0.1	0.1	0.1	1.3
11	Accel Technologies	-	-	0	NA	1.1
12	3Soft	-	-	0	NA	0.8
13	ACTEL	-	0	0	2.1	0.8
14	ULTImate Technology	0	0	0	-6.6	0.5
15	PADS Software	-	-	0	NA	0.3
16	Intusoft	-	-	0	NA	0
	Other Companies	1.0	0.7	0.3	-56.8	8.2
	All N.A. Companies	4.4	3.6	2.6	-27.5	68.1
	All European Companies	0.2	0.3	0.4	30.6	9.8
	All Asian Companies	0.4	0.5	0.5	-0.5	13.9
	All Companies	6.0	5.2	3.9	-25.6	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-66
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Singapore Software Companies, Electronic CAE, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Mentor Graphics	2.5	1.7	0.8	-50.9	37.1
2	Zycad	0.3	0.7	0.5	-27.3	21.5
3	Viewlogic Systems	0.2	0.5	0.4	-16.8	18.1
4	Norlinvest Ltd.	0	0.1	0.1	33.3	3.6
5	Autodesk	-	0.1	0.1	6.8	2.8
6	3Soft	-	-	0	NA	1.4
7	ACTEL	-	0	0	2.1	1.4
8	Accel Technologies	*	-	0	NA	0.4
9	Intusoft	-	-	0	NA	0.1
10	PADS Software	-	-	0	NA	0.1
11	Zuken-Redac	0.1	0.1	-	-100.0	-
	Other Companies	0.9	0.5	0.3	-44.9	13.6
	All N.A. Companies	3.1	2.9	1.8	-36.7	82.8
	All European Companies	0	0.1	0.1	33.3	3.6
	All Asian Companies	0.1	0.1	-	-100.0	-
	All Companies	4.2	3.6	2.2	-37.7	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-67
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Singapore Software Companies, IC Layout, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Summitt Design	0.2	0.1	0.4	158.9	94.9
	Other Companies	0	0	0	146.0	5.1
	All N.A. Companies	0.4	0.1	0.4	158.9	94.9
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	0.4	0.1	0.4	158.2	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-68
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Singapore Software Companies, PCB/MCM/Hybrid, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Zuken-Redac	0.3	0.5	0.5	9.7	41.2
2	Mentor Graphics	0.7	0.5	0.3	-40.8	22.8
3	Norlinvest Ltd.	0.1	0.2	0.2	43.8	17.6
4	IBM	0.1	0.1	0.1	0.4	7.8
5	Altium*	0.1	0.1	0.1	0.4	7.8
6	CAD-UL	-	0.1	0.1	0.1	3.8
7	Accel Technologies	-	-	0	NA	2.5
8	ULTImate Technology	0	0	0	-6.6	1.4
9	PADS Software	-	-	0	NA	0.7
	Other Companies	0.3	0.3	0	-91.5	2.1
	All N.A. Companies	0.8	0.6	0.4	-26.9	33.8
	All European Companies	0.1	0.2	0.3	29.9	22.9
	All Asian Companies	0.3	0.5	0.5	9.7	41.2
	All Companies	1.6	1.6	1.3	-20.7	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-69
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Singapore Software Companies, All Applications, UNIX

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Siemens Nixdorf Info systeme	2.1	1.3	2.8	110.9	16.9
2	EDS Unigraphics	1.9	2.0	2.5	24.3	15.4
3	SDRC	0.3	1.7	1.9	11.9	11.5
4	ESRI	-	1.9	1.8	-6.4	11.0
5	Mentor Graphics	3.2	2.1	1.1	-49.2	6.6
6	IEZ	-	0.3	0.7	128.9	4.2
7	Delcam International	-	0.1	0.6	429.9	3.5
8	IBM	0.3	0.7	0.6	-19.5	3.5
9	Zuken-Redac	0.4	0.5	0.5	-2.4	3.2
10	Zycad	0.3	0.7	0.5	-27.3	2.9
11	Matra Datavision	0	0.3	0.4	23.1	2.5
12	Summitt Design	0.2	0.1	0.3	158.9	2.1
13	Intergraph	0.3	0.3	0.3	-4.4	2.0
14	Viewlogic Systems	0.1	0.3	0.2	-18.9	1.4
15	Computervision	1.0	0.5	0.2	-51.3	1.4
16	B.A.Intelligence Networks	0	0.1	0.1	66.7	0.6
17	CAMAX Manufacturing	-	0.1	0.1	25.2	0.5
18	Autodesk	-	0.1	0.1	23.2	0.4
19	Ansys	-	0	0.1	26.3	0.3
20	Cimatron	0	0	0.1	184.6	0.3
21	Concentra	0.1	0	0.1	24.0	0.3
22	3Soft	-	-	0	NA	0.2
23	Applicon	0.1	0	0	-2.5	0.2
24	DP Technology	0	0	0	13.5	0.1
25	ACTEL	-	0	0	28.7	0.1
26	CAD-UL	-	0	0	-24.9	0
27	PADS Software	-	-	0	NA	0
28	Altium*	-	0.3	-	-100.0	-
	Other Companies	2.6	1.9	1.5	-20.9	8.9
	All N.A. Companies	8.1	10.7	9.9	-7.1	60.4
	All European Companies	2.2	2.1	4.5	115.7	27.4
	All Asian Companies	0.4	0.5	0.5	-2.4	3.2
	All Companies	13.3	15.2	16.5	8.3	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-70
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Singapore Software Companies, All Applications, NT/Hybrid

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Intergraph	-	-	0.1	NA	45.4
2	ESRI	-	-	0.1	NA	38.3
3	IEZ	-	-	0	NA	12.3
4	Mentor Graphics	-	-	0	NA	3.5
5	Intusoft	-	-	0	NA	0.4
6	PADS Software	-	-	0	NA	0.1
	Other Companies	-	-	-	NA	-
	All N.A. Companies	-	-	0.3	NA	87.7
	All European Companies	-	-	0	NA	12.3
	All Asian Companies	-	-	-	NA	-
	All Companies	-	-	0.3	NA	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-71
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Singapore Software Companies, All Applications, Personal Computer

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	0.8	0.8	1.2	60.8	20.5
2	Altium*	0.8	0.8	1.2	60.8	20.5
3	Autodesk	-	0.9	1.1	23.2	18.4
4	Siemens Nixdorf Info systeme	-	0.3	0.8	149.2	13.5
5	ESRI	-	0.6	0.6	-11.8	9.4
6	Investronica SA	0.4	0.4	0.4	-	7.0
7	Norlinvest Ltd.	0.2	0.2	0.3	40.9	5.1
8	Graphisoft Group	-	0.1	0.2	225.3	3.8
9	Intergraph	0.1	0.1	0.2	28.2	2.9
10	Viewlogic Systems	0.1	0.2	0.2	-13.7	2.8
11	Cimatron	0	0	0.1	310.1	1.4
12	CNC Software	0.1	0.1	0.1	10.1	1.1
13	B.A.Intelligence Networks	0	0	0.1	66.7	1.0
14	CAMAX Manufacturing	-	-	0.1	NA	0.9
15	CAD-UL	-	0	0	6.4	0.7
16	Accel Technologies	-	-	0	NA	0.7
17	Vero International Software	-	0	0	45.3	0.5
18	Delcam International	-	0	0	678.4	0.5
19	Mentor Graphics	0	0	0	-41.6	0.4
20	ULTImate Technology	0	0	0	-6.6	0.3
21	ACTEL	-	0	0	-11.1	0.3
22	Ansys	-	0	0	13.3	0.3
23	Summitt Design	0	0	0	158.9	0.3
24	DP Technology	0	0	0	13.5	0.3
25	Computervision	-	0	0	-21.9	0.2
26	Zuken-Redac	-	-	0	NA	0.2
27	Matra Datavision	-	0	0	-8.1	0.2
28	PADS Software	-	-	0	NA	0.1
29	Applicon	-	-	0	NA	0
30	Intusoft	-	-	0	NA	0
	Other Companies	0.5	0.5	0.4	-7.5	7.2
	All N.A. Companies	1.1	2.9	3.6	25.8	59.6
	All European Companies	0.6	1.2	2.0	72.4	33.0
	All Asian Companies	-	-	0	NA	0.2
	All Companies	2.1	4.5	6.0	34.6	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-72
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Singapore Software Companies, All Applications, Host/Proprietary

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Siemens Nixdorf Info systeme	0.3	0.5	0.4	-23.9	53.6
2	IBM	0.3	0.3	0.2	-42.3	22.2
3	ESRI	-	0.1	0.1	-9.1	15.7
4	Ansys	-	0	0	-33.4	1.0
5	EDS Unigraphics	0.3	0.4	-	-100.0	-
6	SDRC	0	0	-	-100.0	-
7	Intergraph	0	0	-	-100.0	-
	Other Companies	0.3	0.1	0.1	-60.2	7.5
	All N.A. Companies	0.7	0.9	0.3	-66.5	38.9
	All European Companies	0.3	0.5	0.4	-23.9	53.6
	All Asian Companies	-	-	-	NA	-
	All Companies	1.4	1.5	0.8	-51.3	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table B-6
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Singapore Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	3Soft	-	-	0	NA	0.1
2	Accel Technologies	-	-	0	NA	0.2
3	ACTEL	-	0	0	2.1	0.1
4	Altium*	0.8	1.1	1.2	14.7	5.3
5	Ansys	-	0.1	0.1	13.3	0.3
6	Applicon	0.1	0	0	0.7	0.1
7	Autodesk	-	1.0	1.2	23.2	5.0
8	B.A.Intelligence Networks	0.1	0.1	0.2	66.7	0.7
9	CAD-UL	-	0.1	0.1	0.1	0.2
10	CAMAX Manufacturing	-	0.1	0.1	110.9	0.6
11	Cimatron	0	0	0.1	249.8	0.6
12	CNC Software	0.1	0.1	0.1	10.1	0.3
13	Computervision	1.0	0.5	0.2	-50.4	1.0
14	Concentra	0.1	0	0.1	24.0	0.2
15	Delcam International	-	0.1	0.6	438.9	2.6
16	DP Technology	0	0	0	13.5	0.1
17	EDS Unigraphics	2.2	2.5	2.5	3.0	10.8
18	ESRI	-	2.7	2.6	-3.4	11.2
19	Graphisoft Group	-	0.1	0.2	225.3	1.0
20	IBM	1.5	1.8	2.0	11.7	8.4
21	IEZ	-	0.3	0.7	141.5	3.1
22	Intergraph	0.4	0.5	0.6	32.4	2.8
23	Intusoft	-	-	0	NA	0
24	Investronica SA	0.4	0.4	0.4	-	1.8
25	Matra Datavision	0	0.4	0.4	22.2	1.8
26	Mentor Graphics	3.2	2.2	1.1	-48.6	4.8
27	Norlinvest Ltd.	0.2	0.2	0.3	40.9	1.3
28	PADS Software	-	-	0	NA	0
29	SDRC	0.3	1.7	1.9	10.8	8.1
30	Siemens Nixdorf Info systeme	2.4	2.2	4.0	83.7	17.0
31	Summitt Design	0.2	0.1	0.4	158.9	1.6
32	ULTImate Technology	0	0	0	-6.6	0.1
33	Vero International Software	-	0	0	45.3	0.1
34	Viewlogic Systems	0.2	0.5	0.4	-16.8	1.7

(Continued)

Table B-6 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Singapore Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
35	Zuken-Redac	0.4	0.5	0.5	-0.5	2.3
36	Zycad	0.3	0.7	0.5	-27.3	2.0
	Other Companies	3.3	2.4	1.8	-22.0	7.8
	All N.A. Companies	10.0	14.4	14.1	-2.3	60.2
	All European Companies	3.1	3.8	6.9	83.9	29.7
	All Asian Companies	0.4	0.5	0.5	-0.5	2.3
	All Companies	16.8	21.1	23.4	11.0	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-73
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Taiwan Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	-	7.5	8.7	17.3	19.2
2	Synopsys	-	0.8	5.7	606.3	12.5
3	Cadence	6.1	4.1	5.2	27.1	11.4
4	IBM	2.3	2.2	2.4	10.7	5.4
5	Mentor Graphics	2.1	2.6	2.0	-22.5	4.4
6	SDRC	0.3	1.7	1.9	10.8	4.2
7	Intergraph	0.9	1.3	1.7	28.2	3.8
8	Dassault*	-	1.2	1.6	34.4	3.5
9	Quickturn Design Systems	-	1.1	1.3	16.5	2.9
10	ESRI	-	1.5	1.3	-14.5	2.9
11	Altium*	0.8	1.1	1.2	14.7	2.7
12	Cimatron	0	0.3	1.2	249.8	2.7
13	COMPASS Design Automation	0.4	1.0	1.1	4.7	2.4
14	MCS	-	1.0	1.0	8.1	2.3
15	Zycad	0.5	1.3	1.0	-27.3	2.1
16	Investronica SA	0.6	0.6	0.6	-	1.3
17	EDS Unigraphics	0.5	0.5	0.5	3.0	1.2
18	Matra Datavision	0	0.4	0.4	22.2	0.9
19	Computervision	1.9	0.8	0.4	-50.4	0.9
20	CAMAX Manufacturing	-	0.2	0.4	110.9	0.8
21	CrossCheck Technology	-	0.2	0.4	127.7	0.8
22	Summitt Design	0.2	0.1	0.4	158.9	0.8
23	PADS Software	-	0.1	0.4	265.2	0.8
24	Hitachi Zosen Info Systems	0.4	0.4	0.4	-12.2	0.8
25	Delcam International	-	0.5	0.4	-29.4	0.8
26	Gerber Systems	-	0.3	0.3	-0.3	0.7
27	Ansys	-	0.3	0.3	13.3	0.6
28	Straessle Informationssysteme	-	-	0.2	NA	0.4
29	Rebis	-	-	0.2	NA	0.4
30	Zuken-Redac	0.3	0.3	0.2	-31.1	0.4
	Other Companies	4.4	4.0	4.1	3.1	9.1
	All N.A. Companies	15.6	29.4	37.8	28.5	83.0
	All European Companies	0.7	2.0	3.0	55.9	6.7
	All Asian Companies	0.7	0.7	0.5	-19.5	1.2
	All Companies	21.3	36.1	45.5	26.2	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-74
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Taiwan Software Companies, Mechanical, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	-	3.0	3.5	17.6	23.7
2	IBM	2.0	1.8	2.0	14.8	13.8
3	SDRC	0.3	1.7	1.9	10.8	12.8
4	Dassault*	-	1.1	1.5	34.8	10.4
5	Cimatron	0	0.3	1.2	249.8	8.2
6	Altium*	0.7	0.9	1.1	20.0	7.2
7	MCS	-	1.0	1.0	8.1	7.0
8	Investronica SA	0.6	0.6	0.6	-	3.9
9	EDS Unigraphics	0.5	0.5	0.5	3.0	3.7
10	Matra Datavision	0	0.4	0.4	22.2	2.9
11	CAMAX Manufacturing	-	0.2	0.4	110.9	2.6
12	Delcam International	-	0.5	0.4	-29.4	2.5
13	Hitachi Zosen Info Systems	0.3	0.4	0.3	-10.7	2.3
14	Computervision	1.9	0.7	0.3	-51.3	2.3
15	Gerber Systems	-	0.3	0.3	-0.3	2.1
16	Intergraph	0.2	0.4	0.3	-17.2	2.0
17	Ansys	-	0.3	0.3	13.3	1.9
18	Straessle Informationssysteme	-	-	0.2	NA	1.3
19	B.A.Intelligence Networks	0.1	0.1	0.2	66.7	1.1
20	CNC Software	0.1	0.1	0.1	10.1	0.9
21	DP Technology	0.1	0.1	0.1	13.5	0.8
22	Livermore Software Tech.	-	0	0	95.0	0.3
23	Graphisoft Group	-	0	0	297.5	0
	Other Companies	0.8	0.7	0.6	-17.3	3.9
	All N.A. Companies	5.2	10.1	11.1	9.8	75.1
	All European Companies	0.7	1.8	2.8	55.1	18.7
	All Asian Companies	0.3	0.4	0.3	-10.7	2.3
	All Companies	7.0	13.0	14.8	14.0	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-75
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Taiwan Software Companies, AEC, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	-	3.2	3.8	18.9	67.4
2	Intergraph	0.3	0.3	0.4	40.3	7.2
3	IBM	0.2	0.3	0.2	-11.0	4.1
4	Rebis	-	-	0.2	NA	3.2
5	CAD Centre	-	0.1	0.2	37.3	2.8
6	Eagle Point	-	0.1	0.2	85.6	2.7
7	Graphisoft Group	-	0	0.1	317.9	1.7
8	Altium*	0.1	0.1	0.1	-19.8	1.3
9	Informatix*	0	0	0.1	207.7	1.1
10	Computervision	0.1	0.1	0.1	-44.1	1.0
11	Dassault*	-	0	0	13.3	0.5
12	MOSS Systems Group	-	0	0	15.3	0.4
13	Hitachi Zosen Info Systems	0	0	0	-32.7	0.3
	Other Companies	0.1	0.4	0.5	29.6	9.2
	All N.A. Companies	0.5	3.9	4.8	22.9	85.5
	All European Companies	-	0.2	0.3	74.4	5.0
	All Asian Companies	0	0	0	-32.7	0.3
	All Companies	0.7	4.5	5.7	25.0	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-76
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Taiwan Software Companies, GIS/Mapping, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	ESRI	-	1.5	1.3	-14.5	33.6
2	Autodesk	-	0.8	1.0	18.3	24.9
3	Intergraph	0.3	0.5	0.9	64.1	22.7
4	IBM	0	0.1	0.1	4.3	2.0
5	Eagle Point	-	-	0	NA	0.2
	Other Companies	0.7	0.8	0.6	-15.9	16.6
	All N.A. Companies	0.4	3.0	3.2	9.6	83.4
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	1.1	3.7	3.9	4.4	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-77
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Taiwan Software Companies, Electronic Design Automation, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Synopsys	-	0.8	5.7	606.3	27.5
2	Cadence	6.1	4.1	5.2	27.1	25.0
3	Mentor Graphics	2.1	2.6	2.0	-22.5	9.6
4	Quickturn Design Systems	-	1.1	1.3	16.5	6.4
5	COMPASS Design Automation	0.4	1.0	1.1	4.7	5.2
6	Zycad	0.5	1.3	1.0	-27.3	4.6
7	Autodesk	-	0.4	0.5	1.6	2.2
8	CrossCheck Technology	-	0.2	0.4	127.7	1.8
9	Summitt Design	0.2	0.1	0.4	158.9	1.8
10	PADS Software	-	0.1	0.4	265.2	1.8
11	Zuken-Redac	0.3	0.3	0.2	-31.1	0.9
12	Intergraph	0.1	0.1	0.1	-16.8	0.6
13	APTIX	-	0.1	0.1	35.3	0.5
14	Silicon Valley Research	-	0.1	0.1	81.7	0.5
15	Integrated Silicon Systems	-	0.1	0.1	78.5	0.5
16	IBM	0.1	0.1	0.1	0.4	0.5
17	Altium*	0.1	0.1	0.1	0.4	0.5
18	SIMUCAD	-	0.1	0.1	34.4	0.3
19	Accel Technologies	-	-	0	NA	0.2
20	i-Logix	-	0	0	3.7	0.2
21	ACTEL	-	0	0	2.1	0.1
22	Contec Microelectronics	-	0	0	10.0	0.1
23	InterHDL	-	-	0	NA	0
24	Intusoft	-	-	0	NA	0
25	ULTImate Technology	0	0	-	-100.0	-
	Other Companies	1.8	1.7	2.0	17.2	9.6
	All N.A. Companies	9.5	12.4	18.6	49.9	89.5
	All European Companies	0	0	-	-100.0	-
	All Asian Companies	0.3	0.3	0.2	-31.1	0.9
	All Companies	11.6	14.4	20.8	44.5	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-78
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Taiwan Software Companies, Electronic CAE, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Synopsys	-	0.8	5.7	606.3	39.5
2	Cadence	3.0	1.8	2.5	34.7	17.0
3	Quickturn Design Systems	-	1.1	1.3	16.5	9.2
4	Zycad	0.5	1.3	1.0	-27.3	6.6
5	Mentor Graphics	0.9	1.3	0.6	-51.9	4.2
6	Autodesk	-	0.4	0.5	1.6	3.1
7	CrossCheck Technology	-	0.2	0.4	127.7	2.6
8	COMPASS Design Automation	0.2	0.4	0.4	-16.2	2.5
9	APTIX	-	0.1	0.1	35.3	0.8
10	SIMUCAD	-	0.1	0.1	34.4	0.5
11	Intergraph	0	0.1	0.1	-15.4	0.4
12	PADS Software	-	0	0	308.4	0.3
13	i-Logix	-	0	0	3.7	0.3
14	ACTEL	-	0	0	2.1	0.2
15	Contec Microelectronics	-	0	0	10.0	0.2
16	Accel Technologies	-	-	0	NA	0.1
17	InterHDL	-	-	0	NA	0.1
18	Intusoft	-	-	0	NA	0
19	Zuken-Redac	0.1	0.1	-	-100.0	-
	Other Companies	1.3	1.4	1.8	27.5	12.5
	All N.A. Companies	4.6	7.7	12.6	64.2	87.5
	All European Companies	-	-	-	NA	-
	All Asian Companies	0.1	0.1	-	-100.0	-
	All Companies	6.0	9.2	14.5	57.6	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-79
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Taiwan Software Companies, IC Layout, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	2.7	1.8	2.3	23.0	48.9
2	Mentor Graphics	0.5	0.6	0.8	33.7	17.2
3	COMPASS Design Automation	0.2	0.6	0.7	19.8	15.5
4	Summitt Design	0.2	0.1	0.4	158.9	7.9
5	Silicon Valley Research	-	0.1	0.1	81.7	2.4
6	Integrated Silicon Systems	-	0.1	0.1	78.5	2.3
7	Intergraph	0.1	0	0	-10.7	0.6
	Other Companies	0.2	0.2	0.2	25.3	5.1
	All N.A. Companies	3.7	3.3	4.4	31.9	94.9
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	3.8	3.5	4.6	31.5	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-80
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Taiwan Software Companies, PCB/MCM/Hybrid, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Mentor Graphics	0.7	0.7	0.6	-17.6	32.6
2	Cadence	0.5	0.4	0.5	11.6	25.7
3	PADS Software	-	0.1	0.3	260.4	17.7
4	Zuken-Redac	0.3	0.2	0.2	-14.7	9.8
5	IBM	0.1	0.1	0.1	0.4	5.5
6	Altium*	0.1	0.1	0.1	0.4	5.5
7	Accel Technologies	-	-	0	NA	1.8
8	Intergraph	0	0	0	-24.5	1.5
9	ULTImate Technology	0	0	-	-100.0	-
	Other Companies	0.1	0.1	0.1	-15.0	5.3
	All N.A. Companies	1.2	1.4	1.5	13.1	84.9
	All European Companies	0	0	-	-100.0	-
	All Asian Companies	0.3	0.2	0.2	-14.7	9.8
	All Companies	1.6	1.7	1.8	7.1	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-81
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Taiwan Software Companies, All Applications, UNIX

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Synopsys	-	0.8	5.7	606.3	18.9
2	Cadence	6.0	4.1	5.2	27.1	17.2
3	Mentor Graphics	2.0	2.5	2.0	-22.3	6.5
4	SDRC	0.3	1.7	1.9	11.9	6.3
5	Quickturn Design Systems	-	1.1	1.3	16.5	4.4
6	Dassault*	-	0.8	1.2	42.8	3.9
7	COMPASS Design Automation	0.4	1.0	1.1	4.7	3.6
8	Zycad	0.5	1.3	1.0	-27.3	3.2
9	IBM	0.7	1.0	0.9	-3.3	3.1
10	Intergraph	0.8	1.0	0.9	-6.6	3.0
11	ESRI	-	1.1	0.9	-16.7	3.0
12	EDS Unigraphics	0.4	0.4	0.5	24.3	1.8
13	Autodesk	-	0.4	0.5	17.3	1.7
14	Cimatron	0	0.2	0.5	184.6	1.6
15	Matra Datavision	0	0.3	0.4	23.1	1.4
16	Computervision	1.9	0.8	0.4	-51.3	1.2
17	CrossCheck Technology	-	0.2	0.4	127.7	1.2
18	Hitachi Zosen Info Systems	0.4	0.4	0.4	-12.2	1.2
19	Summitt Design	0.2	0.1	0.3	158.9	1.2
20	Delcam International	-	0.5	0.3	-30.6	1.1
21	MCS	-	0.5	0.3	-37.1	1.0
22	Gerber Systems	-	0.3	0.3	-0.3	1.0
23	CAMAX Manufacturing	-	0.2	0.2	25.2	0.8
24	Ansys	-	0.2	0.2	26.3	0.6
25	Straessle Informationssysteme	-	-	0.2	NA	0.6
26	Zuken-Redac	0.3	0.3	0.2	-32.5	0.6
27	CAD Centre	-	0.1	0.2	37.3	0.5
28	Silicon Valley Research	-	0.1	0.1	81.7	0.4
29	Integrated Silicon Systems	-	0.1	0.1	78.4	0.3
30	B.A.Intelligence Networks	0	0.1	0.1	66.7	0.3
	Other Companies	3.7	3.1	3.4	9.3	11.1
	All N.A. Companies	13.4	19.1	24.7	29.3	81.8
	All European Companies	0.1	1.1	1.6	40.9	5.3
	All Asian Companies	0.7	0.7	0.5	-20.0	1.8
	All Companies	17.8	24.0	30.2	25.9	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-82
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Taiwan Software Companies, All Applications, NT/Hybrid

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Intergraph	-	-	0.4	NA	80.3
2	ESRI	-	-	0.1	NA	13.3
3	PADS Software	-	-	0	NA	3.3
4	Mentor Graphics	-	-	0	NA	1.8
5	Intusoft	-	-	0	NA	0.9
6	SIMUCAD	-	0	0	102.5	0.4
7	InterHDL	-	-	0	NA	0
	Other Companies	-	0	-	-100.0	-
	All N.A. Companies	-	0	0.4	45,741.4	100.0
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	-	0	0.4	2,282.0	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-83
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Taiwan Software Companies, All Applications, Personal Computer

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	-	7.0	8.2	17.3	56.0
2	IBM	0.8	0.8	1.2	60.8	8.4
3	Altium*	0.8	0.8	1.2	60.8	8.4
4	Cimatron	0	0.2	0.7	310.1	5.1
5	MCS	-	0.5	0.7	57.1	4.9
6	Investronica SA	0.6	0.6	0.6	-	3.9
7	Intergraph	0.1	0.3	0.4	28.2	3.0
8	PADS Software	-	0.1	0.3	254.1	2.1
9	ESRI	-	0.4	0.3	-21.6	1.9
10	Rebis	-	-	0.2	NA	1.2
11	CAMAX Manufacturing	-	-	0.2	NA	1.1
12	Eagle Point	-	0.1	0.1	75.8	1.0
13	CNC Software	0.1	0.1	0.1	10.1	0.9
14	Graphisoft Group	-	0	0.1	317.5	0.7
15	Ansys	-	0.1	0.1	13.3	0.4
16	B.A.Intelligence Networks	0	0	0.1	66.7	0.4
17	DP Technology	0	0.1	0.1	13.5	0.4
18	APTIX	-	0	0.1	32.6	0.4
19	Accel Technologies	-	-	0	NA	0.3
20	SIMUCAD	-	0	0	15.3	0.2
21	Computervision	-	0	0	-21.9	0.1
22	Delcam International	-	0	0	1.9	0.1
23	ACTEL	-	0	0	-11.1	0.1
24	Summitt Design	0	0	0	158.9	0.1
25	Mentor Graphics	0	0	0	-61.6	0.1
26	Matra Datavision	-	0	0	-8.1	0.1
27	Zuken-Redac	-	-	0	NA	0
28	Integrated Silicon Systems	-	0	0	82.9	0
29	MOSS Systems Group	-	0	0	130.6	0
30	Intusoft	-	-	0	NA	0
	Other Companies	0.5	1.0	1.0	2.8	7.0
	All N.A. Companies	1.2	9.5	12.2	28.0	83.2
	All European Companies	0.6	0.8	1.4	76.9	9.8
	All Asian Companies	-	-	0	NA	0
	All Companies	2.2	11.3	14.7	29.3	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-84
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Taiwan Software Companies, All Applications, Host/Proprietary

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Dassault*	-	0.4	0.4	14.8	105.8
2	IBM	0.7	0.5	0.3	-41.1	74.7
3	ESRI	-	0.1	0.1	-26.1	15.4
4	Ansys	-	0	0	-33.4	7.5
5	Informatix*	-	-	0	NA	0.6
6	SIMUCAD	-	0	0	21.5	0.6
7	EDS Unigraphics	0.1	0.1	-	-100.0	-
8	SDRC	0	0	-	-100.0	-
9	Intergraph	0	0	-	-100.0	-
	Other Companies	0.2	0	0	-75.3	1.8
	All N.A. Companies	1.0	0.7	0.4	-48.7	98.2
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	1.2	0.8	0.4	-49.7	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table B-7
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Taiwan Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Accel Technologies	-	-	0	NA	0.1
2	ACTEL	-	0	0	2.1	0.1
3	Altium*	0.8	1.1	1.2	14.7	2.7
4	Ansys	-	0.3	0.3	13.3	0.6
5	APTIX	-	0.1	0.1	35.3	0.2
6	Autodesk	-	7.5	8.7	17.3	19.2
7	B.A.Intelligence Networks	0.1	0.1	0.2	66.7	0.3
8	CAD Centre	-	0.1	0.2	37.3	0.4
9	Cadence	6.1	4.1	5.2	27.1	11.4
10	CAMAX Manufacturing	-	0.2	0.4	110.9	0.8
11	Cimatron	0	0.3	1.2	249.8	2.7
12	CNC Software	0.1	0.1	0.1	10.1	0.3
13	COMPASS Design Automation	0.4	1.0	1.1	4.7	2.4
14	Computervision	1.9	0.8	0.4	-50.4	0.9
15	Contec Microelectronics	-	0	0	10.0	0.1
16	CrossCheck Technology	-	0.2	0.4	127.7	0.8
17	Dassault*	-	1.2	1.6	34.4	3.5
18	Delcam International	-	0.5	0.4	-29.4	0.8
19	DP Technology	0.1	0.1	0.1	13.5	0.3
20	Eagle Point	-	0.1	0.2	95.4	0.3
21	EDS Unigraphics	0.5	0.5	0.5	3.0	1.2
22	ESRI	-	1.5	1.3	-14.5	2.9
23	Gerber Systems	-	0.3	0.3	-0.3	0.7
24	Graphisoft Group	-	0	0.1	317.5	0.2
25	Hitachi Zosen Info Systems	0.4	0.4	0.4	-12.2	0.8
26	i-Logix	-	0	0	3.7	0.1
27	IBM	2.3	2.2	2.4	10.7	5.4
28	Informatix*	0	0	0.1	207.7	0.1
29	Integrated Silicon Systems	-	0.1	0.1	78.5	0.2
30	Intergraph	0.9	1.3	1.7	28.2	3.8
31	InterHDL	-	-	0	NA	0
32	Intusoft	-	-	0	NA	0
33	Investronica SA	0.6	0.6	0.6	-	1.3
34	Livermore Software Tech.	-	0	0	95.0	0.1
35	Matra Datavision	0	0.4	0.4	22.2	0.9
36	MCS	-	1.0	1.0	8.1	2.3
37	Mentor Graphics	2.1	2.6	2.0	-22.5	4.4

(Continued)

Table B-7 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Taiwan Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
38	MOSS Systems Group	-	0	0	15.3	0.1
39	PADS Software	-	0.1	0.4	265.2	0.8
40	Quickturn Design Systems	-	1.1	1.3	16.5	2.9
41	Rebis	-	-	0.2	NA	0.4
42	SDRC	0.3	1.7	1.9	10.8	4.2
43	Silicon Valley Research	-	0.1	0.1	81.7	0.2
44	SIMUCAD	-	0.1	0.1	34.4	0.2
45	Straessle Informationssysteme	-	-	0.2	NA	0.4
46	Summitt Design	0.2	0.1	0.4	158.9	0.8
47	Synopsys	-	0.8	5.7	606.3	12.5
48	ULTImate Technology	0	0	-	-100.0	-
49	Zuken-Redac	0.3	0.3	0.2	-31.1	0.4
50	Zycad	0.5	1.3	1.0	-27.3	2.1
	Other Companies	4.4	4.0	4.1	3.1	9.1
	All N.A. Companies	15.6	29.4	37.8	28.5	83.0
	All European Companies	0.7	2.0	3.0	55.9	6.7
	All Asian Companies	0.7	0.7	0.5	-19.5	1.2
	All Companies	21.3	36.1	45.5	26.2	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-85
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Rest of Asia Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	1.8	11.2	17.0	52.2	20.5
2	Intergraph	4.3	10.6	16.1	52.4	19.5
3	ESRI	-	5.7	6.5	15.7	7.9
4	GDS	0.7	4.8	6.3	30.0	7.6
5	IBM	1.0	4.4	5.2	17.6	6.3
6	Mentor Graphics	4.4	4.7	4.0	-15.3	4.8
7	Smallworld Systems	-	-	3.1	NA	3.8
8	EDS Unigraphics	0.6	2.0	2.9	45.5	3.5
9	PCI Remote Sensing Corp	-	0.4	1.5	336.4	1.9
10	Radian Corporation	1.0	0.9	1.2	24.6	1.4
11	Hewlett-Packard	0.9	1.2	1.1	-7.9	1.4
12	Computervision	3.7	2.6	1.0	-59.6	1.3
13	MapInfo	0.3	0.5	0.9	97.9	1.1
14	Cadence	1.0	0.7	0.8	27.4	1.0
15	Altium*	0.7	0.9	0.8	-9.3	1.0
16	Formtek	0.3	0.4	0.7	81.4	0.9
17	MacNeal-Schwendler	0.5	0.6	0.5	-16.8	0.6
18	Enghouse Systems Ltd.	0.3	0.5	0.5	1.1	0.6
19	Matra Datavision	0.4	0.3	0.5	50.2	0.6
20	Viewlogic Systems	0.2	0.6	0.5	-16.8	0.6
21	CAD Centre	0.7	0.3	0.5	37.3	0.5
22	IEZ	-	-	0.4	NA	0.5
23	Delcam International	0.4	0.4	0.4	-19.2	0.4
24	Investronica SA	0.1	0.3	0.3	19.7	0.4
25	Graphisoft Group	-	0.1	0.3	116.9	0.4
26	International Software Systems	0.2	0.2	0.3	16.7	0.3
27	ACTEL	0.2	0.2	0.2	25.5	0.3
28	Ansys	-	0.2	0.2	13.3	0.3
29	UNISYS	0.1	0.2	0.2	17.7	0.3
30	MOSS Systems Group	-	0.2	0.2	15.3	0.2
	Other Companies	6.8	7.1	7.6	6.7	9.2
	All N.A. Companies	23.3	53.4	68.8	28.8	83.1
	All European Companies	2.4	2.2	6.4	196.1	7.7
	All Asian Companies	-	-	-	NA	-
	All Companies	32.5	62.7	82.8	32.0	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-86
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Rest of Asia Software Companies, Mechanical, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	0.7	4.5	6.8	52.5	32.2
2	IBM	0.8	3.9	4.6	18.1	22.0
3	EDS Unigraphics	0.6	2.0	2.9	45.5	13.8
4	Intergraph	1.2	1.2	1.0	-17.2	4.7
5	Computervision	3.2	2.2	0.9	-59.0	4.4
6	Formtek	0.2	0.4	0.7	80.3	3.3
7	Hewlett-Packard	0.6	0.6	0.6	1.0	2.7
8	Altium*	0.5	0.7	0.6	-22.6	2.6
9	MacNeal-Schwendler	0.5	0.6	0.5	-16.8	2.5
10	Matra Datavision	0.4	0.3	0.5	50.2	2.4
11	Delcam International	0.4	0.4	0.4	-19.2	1.7
12	Investronica SA	0.1	0.3	0.3	19.7	1.5
13	Ansys	-	0.2	0.2	13.3	1.0
14	CAMAX Manufacturing	-	0.1	0.1	110.9	0.7
15	Tebis	-	-	0.1	NA	0.7
16	Cimatron	-	0	0.1	249.8	0.6
17	CNC Software	0.1	0.1	0.1	10.1	0.6
18	ADRA Systems	-	0.1	0.1	11.5	0.6
19	RoboCAD Solutions	-	-	0.1	NA	0.3
20	DP Technology	0	0	0	13.5	0.2
21	Algor Interactive Systems	0	0	0	12.6	0.2
22	Ziegler Informatics	0	0	0	16.2	0.1
23	Vero International Software	0.4	0	0	45.3	0.1
24	Pathtrace Engineering Systems	-	0	0	-	0
25	Graphisoft Group	-	0	0	106.5	0
26	MC2 Engineering Software	0	0	-	-100.0	-
27	Innovative Data Design	0	0	-	-100.0	-
	Other Companies	1.4	0.9	0.8	-13.6	3.7
	All N.A. Companies	8.0	16.0	18.8	17.1	88.8
	All European Companies	1.4	1.1	1.6	39.5	7.4
	All Asian Companies	-	-	-	NA	-
	All Companies	10.7	18.1	21.1	17.0	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-87
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Rest of Asia Software Companies, AEC, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	0.8	4.8	7.4	54.3	53.2
2	GDS	0.2	0.2	1.8	1,113.0	13.3
3	Intergraph	1.8	0.7	0.9	40.3	6.7
4	CAD Centre	0.7	0.3	0.5	37.3	3.2
5	IEZ	-	-	0.4	NA	2.9
6	IBM	0.1	0.3	0.3	-8.7	2.2
7	Graphisoft Group	-	0.1	0.3	117.1	2.2
8	International Software Systems	0.2	0.2	0.3	16.7	2.0
9	MOSS Systems Group	-	0.2	0.2	15.3	1.4
10	Rebis	-	-	0.2	NA	1.3
11	Computervision	0.5	0.3	0.1	-64.3	0.8
12	Hochtief	0.1	0.1	0.1	28.0	0.5
13	Altium*	0.1	0.1	0.1	-13.0	0.5
14	RoboCAD Solutions	-	-	0.1	NA	0.5
15	Formtek	-	-	0	NA	0.3
16	Isicad	0.1	0	0	12.5	0.3
17	Star Informatic	0	0	0	-	0
18	MC2 Engineering Software	0	0	-	-100.0	-
19	CAE-link	0	0	-	-100.0	-
20	Innovative Data Design	0	0	-	-100.0	-
21	Ziegler Informatics	0	0	-	-100.0	-
	Other Companies	1.1	0.7	1.3	75.8	9.3
	All N.A. Companies	3.8	6.6	11.1	68.6	80.0
	All European Companies	0.8	0.7	1.5	113.0	10.7
	All Asian Companies	-	-	-	NA	-
	All Companies	5.7	8.0	13.9	73.1	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-88
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Rest of Asia Software Companies, GIS/Mapping, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Intergraph	1.1	8.6	14.1	64.1	34.3
2	ESRI	-	5.7	6.5	15.7	15.9
3	GDS	0.5	4.7	4.4	-5.2	10.8
4	Smallworld Systems	-	-	3.1	NA	7.6
5	Autodesk	0.2	1.2	1.9	53.5	4.6
6	PCI Remote Sensing Corp	-	0.4	1.5	336.4	3.8
7	Radian Corporation	1.0	0.9	1.2	24.6	2.9
8	MapInfo	0.3	0.5	0.9	97.9	2.2
9	Enghouse Systems Ltd.	0.3	0.5	0.5	1.1	1.3
10	UNISYS	0.1	0.2	0.2	17.7	0.5
11	Strategic Mapping	0.7	0.1	0.1	18.8	0.3
12	APIC Systemes	0.1	0.1	0.1	22.6	0.3
13	IBM	0	0.1	0.1	9.5	0.2
14	Clemessy Geocity	0	0	0	9.7	0.1
15	Autometric	0.2	0.1	-	-100.0	-
16	Eagle Point	0	0	-	-100.0	-
17	Formtek	0	0	-	-100.0	-
18	Contract Data Research	-	0	-	-100.0	-
19	Ziegler Informatics	0	0	-	-100.0	-
	Other Companies	7.9	6.0	6.3	5.4	15.3
	All N.A. Companies	4.6	23.0	31.6	37.1	76.7
	All European Companies	0.1	0.1	3.3	2,300.5	8.0
	All Asian Companies	-	-	-	NA	-
	All Companies	12.6	29.1	41.1	41.2	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

Table A-89
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Rest of Asia Software Companies, Electronic Design Automation,
All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Mentor Graphics	4.4	4.7	4.0	-15.3	48.8
2	Autodesk	0.1	0.7	0.9	31.9	10.8
3	Cadence	1.0	0.7	0.8	27.4	10.3
4	Hewlett-Packard	0.3	0.7	0.6	-15.4	6.8
5	Viewlogic Systems	0.2	0.6	0.5	-16.8	5.9
6	ACTEL	0.2	0.2	0.2	25.5	3.0
7	IBM	0.1	0.1	0.2	110.3	2.1
8	Altium*	0.1	0.1	0.2	110.3	2.1
9	Intergraph	0.2	0.1	0.1	-20.7	1.2
10	Intusoft	-	-	0	NA	0.3
11	CAD-UL	-	0	0	25.1	0.3
12	Ziegler Informatics	0	0	0	6.3	0.3
13	i-Logix	-	-	0	NA	0.2
14	PADS Software	0	-	0	NA	0.1
15	American Small Business Comp.	0	0	0	2.6	0.1
16	InterHDL	-	-	0	NA	0
17	VEDA	0.2	0.1	-	-100.0	-
18	Spectrum Software	0	0	-	-100.0	-
19	OrCAD EDA	0	0	-	-100.0	-
20	ULTImate Technology	0	0	-	-100.0	-
	Other Companies	1.5	1.2	0.8	-34.9	9.7
	All N.A. Companies	6.8	7.8	7.4	-5.4	89.7
	All European Companies	0.2	0.2	0	-75.9	0.6
	All Asian Companies	-	-	-	NA	-
	All Companies	8.5	9.2	8.2	-10.8	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-90
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Rest of Asia Software Companies, Electronic CAE, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Mentor Graphics	3.6	3.5	2.6	-24.1	43.3
2	Autodesk	0.1	0.7	0.9	31.9	14.4
3	Hewlett-Packard	0.3	0.7	0.6	-15.4	9.1
4	Viewlogic Systems	0.2	0.6	0.5	-16.8	7.9
5	Cadence	0.5	0.3	0.4	34.7	6.8
6	ACTEL	0.2	0.2	0.2	25.5	4.0
7	Intergraph	0	0.1	0	-15.4	0.7
8	Intusoft	-	-	0	NA	0.4
9	i-Logix	-	-	0	NA	0.3
10	Ziegler Informatics	0	0	0	-5.9	0.2
11	American Small Business Comp.	0	0	0	2.6	0.1
12	InterHDL	-	-	0	NA	0.1
13	PADS Software	0	-	0	NA	0
14	VEDA	0.2	0.1	-	-100.0	-
15	Spectrum Software	0	0	-	-100.0	-
	Other Companies	1.6	1.1	0.8	-32.8	12.6
	All N.A. Companies	5.1	6.0	5.3	-11.2	87.2
	All European Companies	0.2	0.2	0	-92.9	0.2
	All Asian Companies	-	-	-	NA	-
	All Companies	6.8	7.3	6.1	-16.4	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-91
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Rest of Asia Software Companies, IC Layout, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	0.4	0.3	0.4	23.0	94.9
	Other Companies	0	0	0	16.9	5.1
	All N.A. Companies	0.5	0.3	0.4	23.0	94.9
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	0.5	0.3	0.4	22.7	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-92
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Rest of Asia Software Companies, PCB/MCM/Hybrid, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Mentor Graphics	0.9	1.2	1.4	9.3	75.4
2	IBM	0.1	0.1	0.2	110.3	9.6
3	Altium*	0.1	0.1	0.2	110.3	9.6
4	Cadence	0.1	0.1	0.1	11.6	3.8
5	Intergraph	0.1	0.1	0.1	-24.5	3.1
6	CAD-UL	-	0	0	25.1	1.4
7	Ziegler Informatics	0	0	0	24.5	0.6
8	PADS Software	0	-	0	NA	0.3
9	OrCAD EDA	0	0	-	-100.0	-
10	ULTImate Technology	0	0	-	-100.0	-
	Other Companies	0.1	0.1	0.1	-30.1	5.8
	All N.A. Companies	1.2	1.5	1.7	12.6	92.3
	All European Companies	0	0	0	9.3	1.9
	All Asian Companies	-	-	-	NA	-
	All Companies	1.3	1.7	1.8	8.7	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-93
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Rest of Asia Software Companies, All Applications, UNIX

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Intergraph	3.5	7.4	8.3	12.2	19.5
2	ESRI	-	4.0	4.5	12.3	10.7
3	Mentor Graphics	4.4	4.6	3.9	-15.6	9.2
4	IBM	0.1	2.7	3.5	31.2	8.3
5	Smallworld Systems	-	-	3.1	NA	7.4
6	EDS Unigraphics	0.5	1.7	2.9	75.6	6.8
7	GDS	0.2	1.3	2.2	72.5	5.1
8	Hewlett-Packard	0.8	1.2	1.1	-9.4	2.5
9	Autodesk	0.1	0.7	1.0	52.2	2.4
10	Computervision	3.5	2.4	1.0	-59.9	2.3
11	Cadence	1.0	0.7	0.8	27.4	2.0
12	Radian Corporation	0.3	0.6	0.8	27.0	1.8
13	PCI Remote Sensing Corp	-	0.2	0.7	202.2	1.6
14	Formtek	0.2	0.3	0.5	81.6	1.2
15	Matra Datavision	0.4	0.3	0.5	48.8	1.2
16	CAD Centre	0.7	0.3	0.5	37.3	1.1
17	IEZ	-	-	0.4	NA	0.9
18	MacNeal-Schwendler	0.2	0.2	0.3	44.8	0.8
19	Delcam International	0.4	0.4	0.3	-20.5	0.8
20	Viewlogic Systems	0.1	0.3	0.3	-18.9	0.7
21	UNISYS	0.1	0.2	0.2	14.2	0.5
22	MOSS Systems Group	-	0.2	0.2	9.2	0.4
23	Ansys	-	0.1	0.2	26.3	0.4
24	Enghouse Systems Ltd.	0.2	0.1	0.1	1.1	0.3
25	ACTEL	0	0.1	0.1	51.9	0.2
26	APIC Systemes	0.1	0.1	0.1	22.6	0.2
27	ADRA Systems	-	0.1	0.1	11.5	0.2
28	CAMAX Manufacturing	-	0.1	0.1	25.2	0.2
29	Cimatron	-	0	0.1	184.6	0.1
30	MapInfo	0	0	0	229.8	0.1
	Other Companies	4.6	4.6	4.5	-2.2	10.7
	All N.A. Companies	15.5	29.0	32.8	12.8	77.1
	All European Companies	1.8	1.5	5.2	238.4	12.2
	All Asian Companies	-	-	-	NA	-
	All Companies	22.0	35.2	42.5	20.6	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-94
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Rest of Asia Software Companies, All Applications, NT/Hybrid

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Intergraph	-	-	3.2	NA	87.7
2	ESRI	-	-	0.3	NA	8.1
3	PCI Remote Sensing Corp	-	-	0.1	NA	2.1
4	Mentor Graphics	-	-	0	NA	1.0
5	IEZ	-	-	0	NA	0.6
6	Intusoft	-	-	0	NA	0.5
7	PADS Software	-	-	0	NA	0
8	InterHDL	-	-	0	NA	0
	Other Companies	-	-	-	NA	-
	All N.A. Companies	-	-	3.6	NA	99.4
	All European Companies	-	-	0	NA	0.6
	All Asian Companies	-	-	-	NA	-
	All Companies	-	-	3.6	NA	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-95
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Rest of Asia Software Companies, All Applications, Personal Computer

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	1.7	10.5	16.0	52.2	51.7
2	Intergraph	0.7	3.2	4.7	47.7	15.2
3	ESRI	-	1.3	1.4	5.9	4.6
4	MapInfo	0.3	0.4	0.8	93.8	2.7
5	IBM	0.7	0.6	0.8	27.1	2.6
6	Altium*	0.7	0.6	0.8	27.1	2.6
7	GDS	-	-	0.7	NA	2.4
8	PCI Remote Sensing Corp	-	0.1	0.7	554.7	2.3
9	Radian Corporation	0.7	0.3	0.4	22.5	1.3
10	Enghouse Systems Ltd.	0.1	0.4	0.4	1.1	1.3
11	Investronica SA	0.1	0.3	0.3	19.7	1.0
12	Graphisoft Group	-	0.1	0.3	116.9	1.0
13	International Software Systems	0.2	0.2	0.3	16.7	0.9
14	Formtek	0.1	0.1	0.2	80.8	0.7
15	Viewlogic Systems	0.1	0.2	0.2	-13.7	0.7
16	Rebis	-	-	0.2	NA	0.6
17	ACTEL	0.1	0.1	0.1	11.5	0.5
18	CNC Software	0.1	0.1	0.1	10.1	0.4
19	RoboCAD Solutions	-	-	0.1	NA	0.4
20	Tebis	-	-	0.1	NA	0.4
21	Strategic Mapping	0.7	0.1	0.1	16.2	0.3
22	Cimatron	-	0	0.1	310.1	0.3
23	Hochtief	0.1	0.1	0.1	28.0	0.2
24	CAMAX Manufacturing	-	-	0.1	NA	0.2
25	Hewlett-Packard	0	0	0.1	34.1	0.2
26	Mentor Graphics	0.1	0.1	0.1	-39.3	0.2
27	Computervision	0.1	0.1	0.1	-55.0	0.2
28	Ansys	-	0	0	13.3	0.2
29	Ziegler Informatics	0	0	0	-7.3	0.1
30	ADRA Systems	-	0	0	11.5	0.1
	Other Companies	2.0	1.8	2.1	21.7	6.9
	All N.A. Companies	6.5	18.5	27.5	48.6	89.3
	All European Companies	0.6	0.6	1.2	90.7	3.8
	All Asian Companies	-	-	-	NA	-
	All Companies	9.1	20.9	30.8	47.6	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table A-96
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
Top 30 Rest of Asia Software Companies, All Applications, Host/Proprietary

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	GDS	0.6	3.6	3.4	-5.3	67.8
2	IBM	0.2	1.1	0.9	-19.3	18.6
3	ESRI	-	0.3	0.3	5.5	5.9
4	MacNeal-Schwendler	0.3	0.4	0.2	-52.9	3.7
5	PCI Remote Sensing Corp	-	0	0.1	336.4	1.5
6	Ansys	-	0	0	-33.4	0.4
7	Radian Corporation	-	0	0	-25.0	0.2
8	EDS Unigraphics	0.1	0.3	-	-100.0	-
9	Intergraph	0.1	0	-	-100.0	-
10	VEDA	0	0	-	-100.0	-
	Other Companies	0.2	0.2	0.1	-59.9	1.8
	All N.A. Companies	1.3	5.8	4.9	-16.2	98.2
	All European Companies	0	0	-	-100.0	-
	All Asian Companies	-	-	-	NA	-
	All Companies	1.5	6.1	5.0	-17.9	100.0

NA = Not applicable
* Company statistics contain VAR/distributor revenue not counted in total
Source: Dataquest (August 1995)

Table B-8
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Rest of Asia Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	ACTEL	0.2	0.2	0.2	25.5	0.3
2	ADRA Systems	-	0.1	0.1	11.5	0.2
3	Algor Interactive Systems	0	0	0	12.6	0
4	Altium*	0.7	0.9	0.8	-9.3	1.0
5	American Small Business Comp.	0	0	0	2.6	0
6	Ansys	-	0.2	0.2	13.3	0.3
7	APIC Systemes	0.1	0.1	0.1	22.6	0.1
8	Autodesk	1.8	11.2	17.0	52.2	20.5
9	Autometric	0.2	0.1	-	-100.0	-
10	CAD Centre	0.7	0.3	0.5	37.3	0.5
11	CAD-UL	-	0	0	25.1	0
12	Cadence	1.0	0.7	0.8	27.4	1.0
13	CAE-link	0	0	-	-100.0	-
14	CAMAX Manufacturing	-	0.1	0.1	110.9	0.2
15	Cimatron	-	0	0.1	249.8	0.2
16	Clemessy Geocity	0	0	0	9.7	0.1
17	CNC Software	0.1	0.1	0.1	10.1	0.2
18	Computervision	3.7	2.6	1.0	-59.6	1.3
19	Contract Data Research	-	0	-	-100.0	-
20	Delcam International	0.4	0.4	0.4	-19.2	0.4
21	DP Technology	0	0	0	13.5	0
22	Eagle Point	0	0	-	-100.0	-
23	EDS Unigraphics	0.6	2.0	2.9	45.5	3.5
24	Enghouse Systems Ltd.	0.3	0.5	0.5	1.1	0.6
25	ESRI	-	5.7	6.5	15.7	7.9
26	Formtek	0.3	0.4	0.7	81.4	0.9
27	GDS	0.7	4.8	6.3	30.0	7.6
28	Graphisoft Group	-	0.1	0.3	116.9	0.4
29	Hewlett-Packard	0.9	1.2	1.1	-7.9	1.4
30	Hochtief	0.1	0.1	0.1	28.0	0.1
31	i-Logix	-	-	0	NA	0
32	IBM	1.0	4.4	5.2	17.6	6.3
33	IEZ	-	-	0.4	NA	0.5
34	Innovative Data Design	0	0	-	-100.0	-
35	Intergraph	4.3	10.6	16.1	52.4	19.5
36	InterHDL	-	-	0	NA	0
37	International Software Systems	0.2	0.2	0.3	16.7	0.3

(Continued)

Table B-8 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Update Table (Revenue in $M)
All Rest of Asia Software Companies, All Applications, All Operating Systems

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
38	Intusoft	-	-	0	NA	0
39	Investronica SA	0.1	0.3	0.3	19.7	0.4
40	Isicad	0.1	0	0	12.5	0
41	MacNeal-Schwendler	0.5	0.6	0.5	-16.8	0.6
42	MapInfo	0.3	0.5	0.9	97.9	1.1
43	Matra Datavision	0.4	0.3	0.5	50.2	0.6
44	MC2 Engineering Software	0.1	0.1	-	-100.0	-
45	Mentor Graphics	4.4	4.7	4.0	-15.3	4.8
46	MOSS Systems Group	-	0.2	0.2	15.3	0.2
47	OrCAD EDA	0	0	-	-100.0	-
48	PADS Software	0	-	0	NA	0
49	Pathtrace Engineering Systems	-	0	0	-	0
50	PCI Remote Sensing Corp	-	0.4	1.5	336.4	1.9
51	Radian Corporation	1.0	0.9	1.2	24.6	1.4
52	Rebis	-	-	0.2	NA	0.2
53	RoboCAD Solutions	-	-	0.1	NA	0.2
54	Smallworld Systems	-	-	3.1	NA	3.8
55	Spectrum Software	0	0	-	-100.0	-
56	Star Informatic	0	0	0	-	0
57	Strategic Mapping	0.7	0.1	0.1	18.8	0.1
58	Tebis	-	-	0.1	NA	0.2
59	ULTImate Technology	0	0	-	-100.0	-
60	UNISYS	0.1	0.2	0.2	17.7	0.3
61	VEDA	0.2	0.1	-	-100.0	-
62	Vero International Software	0.4	0	0	45.3	0
63	Viewlogic Systems	0.2	0.6	0.5	-16.8	0.6
64	Ziegler Informatics	0	0	0	-7.3	0.1
	Other Companies	6.8	7.1	7.6	6.7	9.2
	All N.A. Companies	23.3	53.4	68.8	28.8	83.1
	All European Companies	2.4	2.2	6.4	196.1	7.7
	All Asian Companies	-	-	-	NA	-
	All Companies	32.5	62.7	82.8	32.0	100.0

NA = Not applicable

* Company statistics contain VAR/distributor revenue not counted in total

Source: Dataquest (August 1995)

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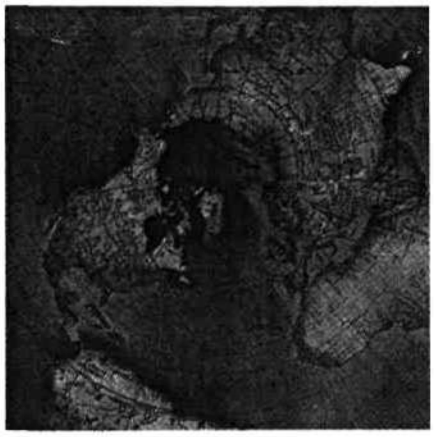


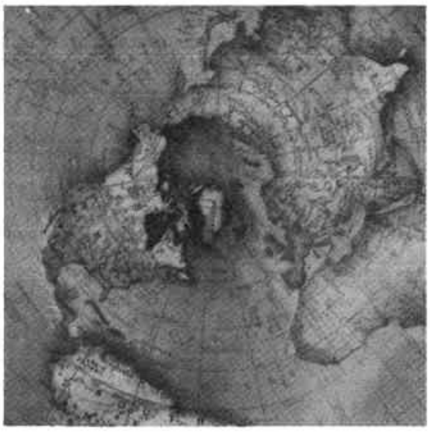
Dataquest

CAD/CAM/CAE and GIS Worldwide 1994 Forecast

Market Statistics

DOCUMENT FILED IN
AEC/GIS WORLDWIDE
CAEC-WW-MS

Program: CAD/CAM/CAE/GIS Worldwide (includes these programs: AEC/GIS Worldwide, EDA Worldwide, Mechanical CAD/CAM Worldwide, CAD/CAM Europe, and CAD/CAM Asia/Pacific)
Product Code: CCAM-WW-MS-9501
Publication Date: May 29, 1995
Filing: Market Analysis



Dataquest

1994 CAD/CAM/CAE/GIS Asia Market Share

Market Statistics

Program: CAD/CAM/CAE/GIS Asia/Pacific
Product Code: CCAM-AP-MS-9501
Publication Date: March 27, 1995
Filing: Market Analysis

1994 CAD/CAM/CAE/GIS Asia Market Share

Market Statistics

Program: CAD/CAM/CAE/GIS Asia/Pacific
Product Code: CCAM-AP-MS-9501
Publication Date: March 27, 1995
Filing: Market Analysis

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Note: All tables show estimated data.

1994 CAD/CAM/CAE/GIS Asia Market Share

Introduction

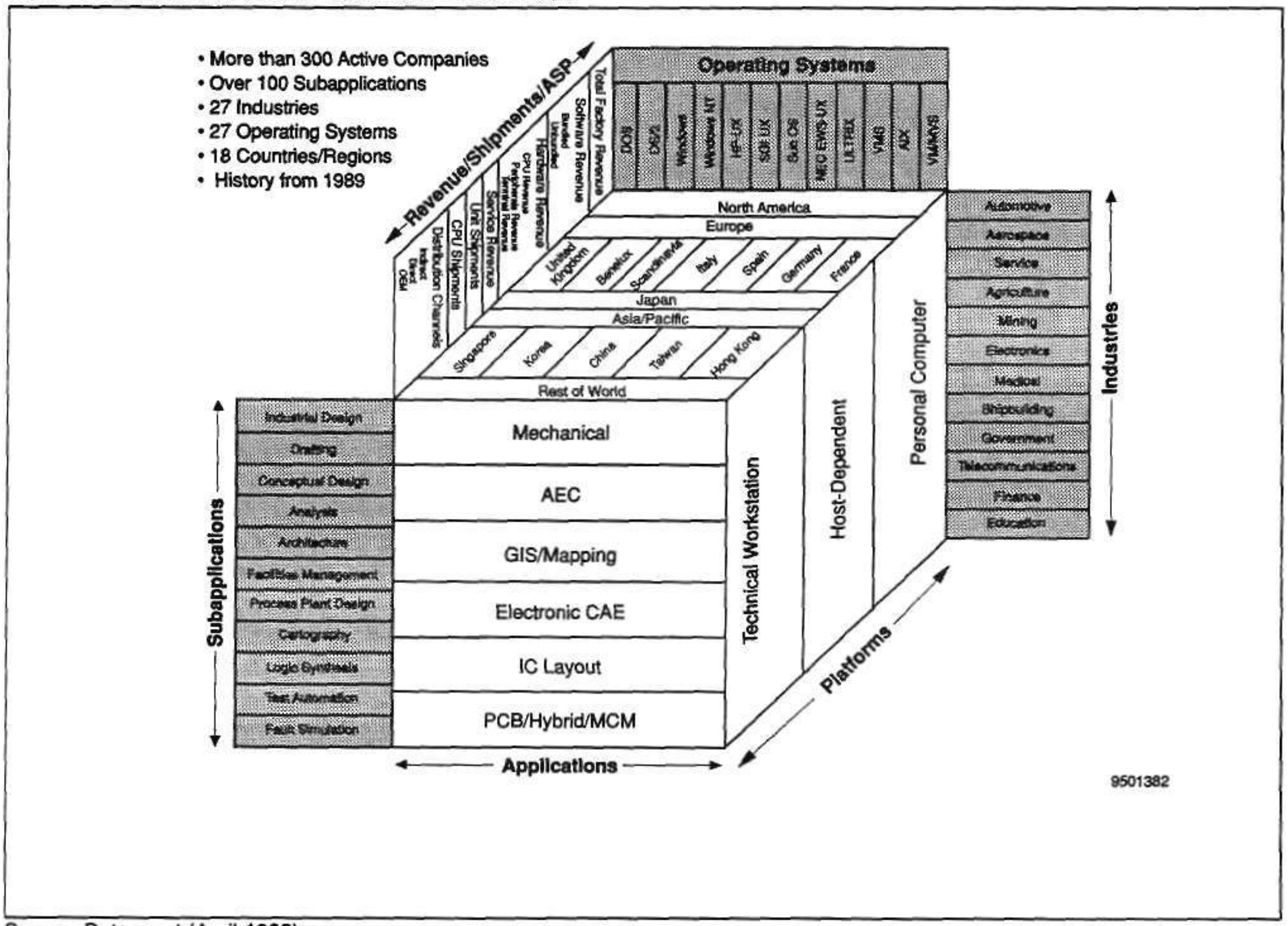
CAD/CAM/CAE/GIS systems have dramatically changed the methods by which designers and production managers originate and implement products. CAD and CAE systems allow designers to create, draft, analyze, test, and manipulate products on a screen in two and three dimensions. As CAD/CAM/CAE/GIS systems continue to decrease in cost, they become more available and cost justifiable to new users.

In order to provide a comprehensive view of the CAD/CAM/CAE/GIS industry, Dataquest's CAD/CAM/CAE/GIS group maintains a large database of industry information. The type of information contained in the database is depicted in Figure 1.

A companion article detailing the results of 1994 market share was published in our *Dataquest Alert* dated March 14, 1995.

Table 1 summarizes the performance in various segments of the CAD/CAM/CAE/GIS markets in 1994 versus 1993.

Figure 1
CAD/CAM/CAE/GIS Market Database



Source: Dataquest (April 1995)

Table 1
CAD/CAM/CAE/GIS Market Summary, 1993 to 1994

	Software Revenue		1993-1994	Total Factory Revenue		1993-1994	Seat Shipments		1993-1994
	1993	1994	Growth (%)	1993	1994	Growth (%)	1993	1994	Growth (%)
Applications									
Mechanical	2,213.2	2,417.4	9.2	7,424.4	7,917.0	6.6	284,051	303,320	6.8
AEC	777.2	865.2	11.3	2,306.8	2,506.6	8.7	195,941	222,152	13.4
GIS/Mapping	651.9	727.1	11.5	1,982.0	2,160.9	9.0	83,384	105,919	27.0
Electronic CAE	814.2	910.4	11.8	2,302.0	2,586.8	12.4	92,437	98,000	6.0
IC Layout	204.0	240.7	18.0	630.0	741.7	17.7	10,760	12,565	16.8
PCB/MCM/Hybrid	264.3	269.5	2.0	827.3	818.8	-1.0	32,955	33,639	2.1
All Applications	4,924.8	5,430.2	10.3	15,472.5	16,731.9	8.1	699,528	775,596	10.9
Regions									
North America	1,755.7	1,973.8	12.4	5,545.6	6,219.2	12.1	313,278	353,196	12.7
Europe	1,606.3	1,738.9	8.3	5,193.5	5,460.8	5.1	226,778	243,161	7.2
Japan	1,288.0	1,398.6	8.6	4,031.8	4,258.6	5.6	133,425	144,913	8.6
Asia/Pacific	153.6	178.2	16.0	375.2	449.6	19.8	14,849	18,484	24.5
Rest of World	121.2	140.7	16.1	326.3	343.7	5.3	11,198	15,842	41.5
Worldwide	4,924.8	5,430.2	10.3	15,472.5	16,731.9	8.1	699,528	775,596	10.9
Platforms									
Technical Workstation	3,428.2	3,884.3	13.3	10,866.2	12,064.9	11.0	196,310	222,656	13.4
Host Dependent	354.1	254.0	-28.3	1,795.2	1,529.5	-14.8	35,804	39,293	9.7
Personal Computer	1,142.4	1,292.0	13.1	2,811.1	3,137.5	11.6	467,414	513,647	9.9
All Platforms	4,924.8	5,430.2	10.3	15,472.5	16,731.9	8.1	699,528	775,596	10.9

Source: Dataquest (March 1995)

About This Document

This document contains Dataquest's detailed market share information on the CAD/CAM/CAE/GIS industry. The following list contains descriptions of the companies included in the Market Share books. See Tables 2, 3, 4, and 5 for changes from our 1993 report.

- Mechanical applications—All companies in database with mechanical revenue
- GIS and AEC applications—All companies in database with GIS revenue and all companies in database with AEC revenue. Additionally, we have added GIS data companies.
- Electronic design automation applications—All companies in database with EDA (electronic CAE, IC layout, PCB/hybrid/MCM) revenue
- Europe Overview—All companies with European revenue
- Asia—All companies with Asian revenue

We no longer publish top-level market statistics for the entire CAD/CAM/CAE/GIS industry. This data is available by calling Suzanne Snygg at (408) 437-8124. More detailed data on these markets may be requested through our client inquiry service.

We recognize that final bookeeping is not yet complete for all companies. This document represents our best effort to get early, accurate information to our subscribers. We will follow up with primary and secondary research through April 30 to verify and cross-tabulate and refine, producing our market share update by June 30.

Dataquest's policy is to continually update its market information, for current and past years, with any new data received in order to arrive at the most accurate market representation possible.

Table 2
Companies Renamed

Original Company Name	New Company Name
ACDS Graphic System	Geomax International
Genrad	VEDA
GeoVision	SHL Systemhouse
Graphisoft Software Dev	Graphisoft Group
Kohns & Poppenhaeger	Poppenhaeger Grips GmbH
Microway	M.O.C.
Scientific & Engineering Software	SES Inc.
Silvar-Lisco	SVRI (Silicon Valley Research Inc.)
Smallworld Systems	SmallworldWide
Swanson Analysis	Ansys
Tactics International	Tactician Corporation

Source: Dataquest (March 1995)

Table 3
Companies (or CAD Portions of Companies) Sold/Merged

Company Name	Acquired by/Merged with
Aries Technology	MacNeal-Schwendler
ANACAD-EES	Mentor Graphics
Betronex & Visionics	Norlinvest Ltd.
Digital—Mechanical Software	PROCAD GmbH
Chronological Simulation	Viewlogic
Computervision—GIS	Unisys
Control Data—Mechanical Software	ICEM Technologies
Foresight Resources	Softdesk
Generation 5 Technology	Geo/SQL Corporation
Kork Systems	Autometric
LandCadd	Eagle Point
Logic Modeling Corp	Synopsys
Model Technology	Mentor Graphics
PDA Engineering	MacNeal-Schwendler
Point Control	CAMAX Manufacturing
Racal-Redac	Zuken-Redac
Sunrise	Viewlogic
Syscan	Sysdeco Innovation

Source: Dataquest (March 1995)

Table 4
Companies Deleted from Database

Region/Company	
American	European
A.I. Systems	Aplein*
Aura CAD/CAM Systems	Aucos elektronische
CAE-link	BATISOFT
Claris	CAD-Capture
Control Data—Hardware	CAD TECH Iberica*
Data General	CAMTEK
ECOM Associates	Caroline Informatique
Georgia Tech Research	Contract Data Research
GEOVISION Inc.	Data Technology/DATECH*
Innovative Data Design	Datagraphic
Intrinsix	DELTA CAD*
Land Innovation	EME
Maptech	FEA
Massteck	FEGS
MC2 Engineering Software	ItalCad
Phase Three Logic	Kreon
Synercom	Lamp Software
Teradyne	Logic Systems Designers*
Understanding Systems	Macao Systems
Asian	MEDESIGN
Kanematsu Semiconductor*	Mucke Software
	S.T.L.D.s.r.l.
	Soft*

*Distributors
Source: Dataquest (March 1995)

Table 5
Companies Added to Database

Region/Company	
American	European
3Soft	Abstract Hardware
ArcSys	ACA Ltd.
Chronology	Speed
Claritas/NPDC	Spot Image Corp.
Design Acceleration	ULTimate Technology
Eagle Point	
EOSAT	
Equifax/NDS	
Fintronic	
Geographic Data Technology	
Integrity Engineering	
InterHDL	
Intusoft	
Nextwave DA	
OEA International	
Optem Engineering	
Simulation Technology	
Rebis (merger of EDA and ADev)	
T D Technology	
Veritools	
VISTA Environmental Inf.	

*Distributors
Source: Dataquest (March 1995)

Segmentation Definitions

This section lists the definitions specific to this document. The following paragraphs define the segments.

Applications

Mechanical

The mechanical segment refers to computer-aided tools used by engineers, designers, analysts, technicians, and draftspeople working predominantly in the discrete manufacturing industries, but includes government and education. Users of mechanical CAD/CAM/CAE tools work in all departments across the typical organization, with a majority found in product design, advanced engineering, and manufacturing engineering. Common design applications include conceptual design, industrial design, structural or thermal analysis, detail design, and electromechanical design (the mechanical part of design with electrical or electronic components and mechanisms). Common manufacturing applications include tool and fixture design, numerical control part programming, off-line robotics programming, and interface to quality control systems. Management tools for database control and distribution are included in this segment, as well as user-defined application programming.

Architecture, Engineering, and Construction (AEC)

The AEC segment covers the use of computer-aided tools by architects, contractors, plant engineers, civil engineers, and other people associated with these disciplines to aid in designing and managing buildings, industrial plants, ships, and other types of nondiscrete entities.

Geographic Information Systems (GIS)/Mapping

GIS is computer-based technology, and the segment is composed of hardware, software, and data used to capture, edit, display, and analyze spatial (tagged by location) information.

Electronic Design Automation (EDA)

The EDA segment covers computer-based tools used to automate the process of designing an electronic product, including printed circuit boards, ICs, and systems. EDA includes ECAE, IC layout, and PCB/ hybrid/MCM, as follows:

- Electronic Computer-Aided Engineering (ECAE)—These are computer-aided tools used in the engineering or design phase of electronic products (as opposed to the physical layout phase of the product). Examples of electronic CAE applications are schematic capture and simulation.
- IC Layout—This is a software application tool used to create and validate the physical implementation of an IC. The IC layout category comprises polygon editors, symbolic editors, placement and routing (gate array, cell, and block), design verification tools (DRC/ERC/ logic-to-layout).
- PCB/Hybrid/MCM—This segment covers products used to create the placement and routing of the traces and components laid out on a printed circuit board. Also included in this category are thermal analysis tools.

Regions

The following paragraphs define the regions.

North America

North America includes United States, Mexico, and Canada.

Europe

Europe includes the United Kingdom, Scandinavia, Benelux, France, Germany, Italy, Spain, and Rest of Europe.

Japan

Asia/Pacific

Asia includes Singapore, Taiwan, Korea, China, and Hong Kong.

Rest of World

Rest of World includes all other countries including Australia, New Zealand, India, Africa, Central America, South America, and the Middle East.

Platforms

The following paragraphs define the platforms.

Technical Workstation

A technical workstation is a single-user computer distinguished from a personal computer by its features and by the user's potential range of expansion on the platform. Features include a virtual, multitasking operating system (UNIX, VMS, or Domain); the computer is designed by the manufacturer to run high-performance graphics applications in a multiuser/multitasking environment.

Host-Dependent

Host-dependent is a shared logic system in which the external workstations' functions are dependent on a host computer.

Personal Computer

A personal computer is a single-user computer distinguished from a technical workstation by its features and by the user's potential range of expansion on the platform. Features found in technical workstations (such as a virtual operating system, networking, high-performance graphics, multiuser/multitasking capability) are optional rather than integrated by the manufacturer.

Metrics

The following paragraphs define measurements.

- Total factory revenue is defined as the amount of money received by a manufacturer for its goods and services measured in U.S. dollars. Total factory revenue does not include revenue that a company may receive from products that are sold to another company for resale (OEM revenue). Total factory revenue is the sum of software revenue, hardware revenue, and service revenue.

- Unit shipment is defined as the number of seats delivered (number of possible simultaneous users of product delivered) excluding OEM shipments.

- Hardware revenue is revenue derived from sales of CPUs (including operating systems), terminals (for host-dependent systems), and peripherals.

- Software revenue is revenue derived from the sale of application software that exists on a company's standard price list.

- Service revenue is defined as all revenue derived from the service and support of CAD/CAM/CAE/GIS systems. Service revenue can be calculated in the tables by subtracting hardware and software revenue from total revenue.

  - Maintenance fees for hardware and software

  - Management and operations services—help desk, education and training, disaster recovery, vaulting, and configuration management.

- Service bureau—project work, including construction of database, data conversion, product design, analysis, or manufacturing.
- Application development—design and development of customized software applications or the modification, enhancement of customization of existing software applications, adding new functionality.
- Consulting revenue—assessment of CAD/CAM/CAE/GIS business and information technology needs and the formulation of a plan based on needs identification.
- Implementation and integration services—planning, implementation, migration, and integration of software products (software network support and integration, account integration management, data center design, and construction).

Market Share Methodology

Dataquest uses both primary and secondary sources to produce our market share data. In the fourth quarter of each year and second quarter of the subsequent year, we survey all participants in each industry. Each vendor is offered the opportunity to self-report the information required. Although there is a primary contact for each company, large companies are surveyed across product lines and across geographic regions. Thus, there is a corresponding increase in the number of contacts at large companies. (Dataquest maintains a large contact database on all sources of information). Examples of the job titles of people contacted for information are the following:

- President and CEO
- Vice president and general manager
- Vice president of marketing
- Vice president, strategic product planning
- Director of strategic planning
- Director of marketing
- Director of market development
- Manager, CAD/CAM/CAE/GIS Marketing Programs
- Market research analyst

The Audit Process

Data supplied by vendors are evaluated against information drawn from many sources, including the following:

- Revenue published by major industry participants
- Estimates made by knowledgeable and reliable industry spokespersons
- Government data or trade association data
- Published product literature and price lists

- Interviews with knowledgeable manufacturers, distributors, and users
- Relevant economic data
- Information and data from online data banks
- Articles in both the general and trade press
- Annual reports, SEC documents, credit reports
- Company publications and press releases
- Reports from financial analysts
- User studies
- Reseller and supplier reports and reports from a vendor's competitors

In addition, Dataquest sums vendor revenue across other industries covered by Dataquest to make sure that revenue is not credited twice and checks with multiple sources at one company to cross-check data on that company.

Dataquest analysts have many years of experience in how to apply the above tools to get the most accurate information possible on a particular company (such as what to use when and what industry averages are). We believe that the estimates presented here are the most accurate and meaningful generally available today. It is the CAD/CAM/CAE/GIS group's policy to continually update our market information for any year, based on any new data received, in order to arrive at the most accurate market representation possible.

Dataquest's CAD/CAM/CAE/GIS market numbers are often higher than those reported by other sources. We survey worldwide, which involves more vendors, higher total market revenue, lower market share per vendor, and a more accurate market picture—particularly useful when comparing regions or applications.

Publishing Schedule

We publish market share and forecasting, twice each year for each, allowing for both timely distribution of data and thorough analysis and forecasting. Our annual delivery schedule is as follows:

- Market will be published and distributed to clients by March 31.
- Forecasting from the market share tables provides a five-year forecast period, available after April 30. The books will be shipped by May 31.
- Final updated market share tables, based on additional data collection and analysis, will be completed by June 30. At this point, the market share database is frozen and will not be changed until the end of the year. For the next six months, supplementary market data will be based on this final market data. Books will be shipped by July 31.
- We provide complete final forecast tables by July 31. These tables take into consideration changes in the market share during the previous six months. Books will be shipped by September 31.

Table A-1
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Japan Software Companies, All Applications, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Fujitsu	114.3	165.8	165.9	0.1	11.9
2	IBM	110.3	125.8	143.4	13.9	10.3
3	NEC	84.5	96.4	101.7	5.6	7.3
4	Hitachi	73.1	80.8	86.9	7.5	6.2
5	Altium*	60.0	66.5	79.6	19.6	5.7
6	Toshiba*	66.4	72.0	78.1	8.6	5.6
7	Nihon Unisys	44.2	62.9	66.5	5.6	4.8
8	C. Itoh Techno-Science*	24.4	52.5	59.0	12.5	4.2
9	Info. Services Int'l. Dentsu*	40.2	50.5	58.4	15.7	4.2
10	Seiko*	44.0	49.5	54.4	10.0	3.9
11	Cadence	75.9	47.9	54.3	13.6	3.9
12	Zuken-Redac	51.7	48.1	54.1	12.5	3.9
13	Autodesk	52.5	42.6	46.8	9.7	3.3
14	Mutoh Industries*	53.9	43.2	45.6	5.5	3.3
15	Marubeni Hytech*	36.7	39.7	44.0	10.8	3.1
16	Synopsys	-	20.8	36.0	72.6	2.6
17	Sharp*	23.9	27.9	32.5	16.4	2.3
18	Mentor Graphics	25.8	24.3	31.1	28.1	2.2
19	Hewlett-Packard	15.0	29.8	29.8	0.2	2.1
20	SDRC	28.3	26.7	29.5	10.5	2.1
21	Andor*	29.5	26.6	28.7	8.1	2.1
22	Kozo Keikaku Engineering*	16.7	24.2	27.0	11.2	1.9
23	Sumisho Electronics*	4.9	19.7	21.9	11.0	1.6
24	CADIX	17.6	20.3	21.8	7.2	1.6
25	Dassault*	-	-	19.3	NA	1.4
26	Wacom	29.5	18.9	18.0	-4.5	1.3
27	Hakuto*	16.5	17.6	17.5	-0.7	1.3
28	Yokogawa Digital Computer	11.9	15.4	17.2	11.3	1.2
29	Tokyo Electron*	17.6	14.0	16.0	14.5	1.1
30	Toshiba Engineering*	9.8	13.4	15.1	13.4	1.1
	Other Companies	99.6	66.4	73.3	10.4	5.2
	All N.A. Companies	389.0	453.8	503.7	11.0	36.0
	All European Companies	6.3	10.7	14.6	35.8	1.0
	All Asian Companies	679.6	757.0	807.0	6.6	57.7
	All Companies	1,174.5	1,288.0	1,398.6	8.6	100.0

* Companies contain VAR/Distributor Revenue, not counted in total

NA = Not applicable

Source: Dataquest (March 1995)

Table A-2
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Japan Software Companies, Mechanical, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	91.6	105.7	121.1	14.6	16.6
2	Fujitsu	46.9	72.9	73.3	0.5	10.0
3	Hitachi	54.8	61.8	66.4	7.5	9.1
4	Altium*	47.1	54.8	65.4	19.4	8.9
5	Info. Services Int'l. Dentsu*	40.2	50.5	58.4	15.7	8.0
6	NEC	50.4	54.3	57.3	5.5	7.8
7	Toshiba*	46.5	50.4	54.5	8.2	7.4
8	Nihon Unisys	38.0	51.5	54.2	5.3	7.4
9	C. Itoh Techno-Science*	19.7	30.4	34.6	13.6	4.7
10	Mutoh Industries*	40.9	31.3	32.6	4.1	4.5
11	SDRC	28.3	26.7	29.5	10.5	4.0
12	Sharp*	14.3	22.3	26.3	17.7	3.6
13	Seiko*	19.0	20.3	23.3	15.0	3.2
14	Hewlett-Packard	14.6	19.8	20.0	1.0	2.7
15	Autodesk	21.0	17.1	18.7	9.7	2.6
16	Sumisho Electronics*	3.8	16.8	18.4	9.6	2.5
17	Marubeni Hytech*	16.3	15.1	18.3	21.5	2.5
18	Dassault*	-	-	18.1	NA	2.5
19	Andor*	19.0	17.1	17.6	2.6	2.4
20	Hakuto*	16.5	17.6	17.5	-0.7	2.4
21	Tokyo Electron*	17.6	14.0	16.0	14.5	2.2
22	Toshiba Engineering*	9.8	13.4	15.1	13.4	2.1
23	Computervision	21.7	20.0	12.1	-39.2	1.7
24	MacNeal-Schwendler	11.5	14.5	12.1	-16.6	1.7
25	Ricoh*	4.4	9.4	11.6	23.5	1.6
26	Kozo Keikaku Engineering*	5.2	8.8	9.5	7.6	1.3
27	MARC	-	8.2	9.3	14.3	1.3
28	EDS Unigraphics	8.9	10.8	9.3	-14.3	1.3
29	Graphtec Engineering	6.9	7.0	7.9	12.4	1.1
30	Toyo Information Systems*	6.0	6.9	7.6	10.0	1.0
	Other Companies	39.5	26.9	34.1	26.8	4.7
	All N.A. Companies	201.5	237.5	249.4	5.0	34.1
	All European Companies	4.6	6.0	8.7	45.5	1.2
	All Asian Companies	356.2	408.0	439.1	7.6	60.0
	All Companies	601.8	678.3	731.3	7.8	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-3
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Japan Software Companies, AEC, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Fujitsu	35.4	49.7	50.1	0.8	27.4
2	Autodesk	22.6	18.3	20.1	9.7	11.0
3	NEC	13.4	17.1	18.9	10.4	10.3
4	Kozo Keikaku Engineering*	11.5	15.4	17.5	13.3	9.5
5	IBM	12.7	13.3	15.1	14.1	8.3
6	Nihon Unisys	6.2	11.5	12.3	7.2	6.7
7	C. Itoh Techno-Science*	2.2	11.0	12.2	10.4	6.6
8	CPU	7.1	9.6	10.7	11.2	5.9
9	Mutoh Industries*	9.7	9.7	10.6	8.8	5.8
10	Toshiba*	8.0	8.6	9.5	10.5	5.2
11	Andor*	8.2	7.4	8.9	20.0	4.9
12	Hitachi	7.3	7.9	8.6	8.9	4.7
13	Altium*	7.8	5.8	7.9	36.8	4.3
14	Kanematsu Computer Systems*	4.3	6.2	6.8	9.3	3.7
15	Intergraph	4.5	5.6	5.1	-9.0	2.8
16	INS Engineering	3.6	3.8	4.3	11.5	2.3
17	Century Research Center	4.0	3.7	4.2	12.2	2.3
18	GDS	2.4	6.2	3.6	-42.0	2.0
19	Informatix*	2.5	3.0	3.2	6.8	1.7
20	Mitsubishi Electric*	1.9	2.2	2.3	3.2	1.2
21	Sumisho Electronics*	0.8	1.8	2.2	22.9	1.2
22	Uchida Yoko	1.9	1.9	2.1	11.5	1.2
23	Design Automation	1.9	1.5	1.8	18.4	1.0
24	Computervision	1.3	3.5	1.8	-49.2	1.0
25	CAD Centre	0.8	1.2	1.6	32.0	0.9
26	Toyo Information Systems*	1.2	1.4	1.6	9.0	0.9
27	Nihon Itek*	1.1	1.0	1.3	28.7	0.7
28	Dassault*	-	-	1.2	NA	0.7
29	Hitachi Zosen Info Systems	0.5	0.4	0.5	12.2	0.3
30	Technodia*	0.2	0.4	0.5	9.8	0.2
	Other Companies	4.1	4.7	4.7	-0.4	2.6
	All N.A. Companies	43.4	47.0	45.8	-2.6	25.0
	All European Companies	1.3	1.7	2.3	34.1	1.3
	All Asian Companies	97.7	124.4	130.3	4.8	71.2
	All Companies	146.5	177.9	183.1	3.0	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-4
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Japan Software Companies, GIS/Mapping, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Fujitsu	12.6	23.2	22.8	-2.0	23.0
2	Uchida Yoko	7.9	8.2	9.2	11.4	9.3
3	Hitachi	7.3	8.1	8.8	8.5	8.9
4	GDS	5.6	6.2	8.4	34.5	8.5
5	Toshiba*	6.6	7.2	8.1	12.1	8.2
6	Pasco*	4.9	5.5	6.3	13.6	6.3
7	Mitsubishi Electric*	5.4	6.1	5.5	-10.5	5.5
8	Autodesk	5.8	4.7	5.1	9.7	5.2
9	INS Engineering	3.7	4.0	4.5	12.2	4.6
10	Intergraph	5.3	4.2	4.4	5.5	4.5
11	ESRI	-	3.1	3.8	23.7	3.8
12	Mitsui Engineering	3.5	3.0	3.4	11.3	3.4
13	NEC	2.0	2.3	2.6	11.8	2.6
14	Mutoh Industries*	3.2	2.2	2.4	11.5	2.5
15	CADIX	1.8	2.0	2.3	12.3	2.3
16	C. Itoh Techno-Science*	-	1.8	2.2	18.0	2.2
17	Century Research Center	1.8	1.8	2.0	11.9	2.0
18	MapInfo	-	0.3	1.8	515.5	1.8
19	Andor*	1.4	1.3	1.3	2.4	1.3
20	IBM	0.8	0.9	0.9	-1.1	0.9
21	PCI Remote Sensing Corp	-	-	0.5	NA	0.5
22	PROCAD GmbH	-	0	0	50.0	0
	Other Companies	16.5	8.9	9.7	9.5	9.8
	All N.A. Companies	17.4	19.4	24.9	28.6	25.2
	All European Companies	-	0	0	50.0	0
	All Asian Companies	48.4	60.4	64.1	6.1	64.9
	All Companies	82.4	88.7	98.7	11.4	100.0

* Companies contain VAR/Distributor Revenue, not counted in total

NA = Not applicable

Source: Dataquest (March 1995)

Table A-5
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Japan Software Companies, EDA, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	75.9	47.9	54.3	13.6	14.2
2	Zuken-Redac	51.3	47.6	53.5	12.5	14.0
3	Synopsys	-	20.8	36.0	72.6	9.4
4	Mentor Graphics	25.8	24.3	31.1	28.1	8.1
5	Seiko*	25.0	29.2	31.1	6.5	8.1
6	Marubeni Hytech*	20.4	24.7	25.7	4.3	6.7
7	NEC	18.7	22.7	23.1	1.5	6.0
8	Fujitsu	19.4	19.9	19.7	-0.8	5.1
9	Yokogawa Digital Computer	11.9	15.4	17.2	11.3	4.5
10	CADIX	12.3	14.2	14.9	5.0	3.9
11	OKURA*	6.3	10.8	14.3	32.7	3.7
12	Wacom	23.3	13.2	12.1	-8.0	3.2
13	C. Itoh Techno-Science*	2.4	9.2	10.1	10.2	2.6
14	Hewlett-Packard	0.4	9.9	9.8	-1.3	2.6
15	Viewlogic Systems	-	6.7	7.3	10.1	1.9
16	Quickturn Design Systems	-	5.5	6.4	18.2	1.7
17	IBM	5.2	6.0	6.3	5.1	1.6
18	Altium*	5.2	6.0	6.3	5.1	1.6
19	Sharp*	9.6	5.6	6.2	11.1	1.6
20	COMPASS Design Automation	6.6	5.0	6.2	22.5	1.6
21	Toshiba*	5.3	5.8	6.1	5.0	1.6
22	CrossCheck Technology	-	4.7	5.4	14.0	1.4
23	Sophia Systems*	5.3	3.9	4.1	5.4	1.1
24	Hitachi	3.7	3.1	3.1	2.6	0.8
25	PROCAD GmbH	-	2.6	2.9	11.8	0.8
26	Autodesk	3.1	2.6	2.8	9.7	0.7
27	Summitt Design	-	1.9	2.8	44.0	0.7
28	PADS Software	-	3.2	2.5	-21.0	0.7
29	Contec Microelectronics	-	2.2	2.5	13.4	0.6
30	Uchida Yoko	3.1	2.3	2.4	4.8	0.6
	Other Companies	39.7	23.6	23.1	-2.2	6.0
	All N.A. Companies	126.7	150.0	183.6	22.4	47.8
	All European Companies	0.4	3.0	3.6	17.7	0.9
	All Asian Companies	177.3	164.2	173.6	5.7	45.2
	All Companies	344.2	340.8	383.8	12.6	100.0

* Companies contain VAR/Distributor Revenue, not counted in total

Source: Dataquest (March 1995)

Table A-6
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Japan Software Companies, ECAE, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Synopsys	-	20.8	36.0	72.6	20.6
2	Cadence	41.0	22.0	25.0	13.2	14.3
3	Marubeni Hytech*	19.7	23.5	24.3	3.2	13.9
4	Seiko*	7.7	15.8	17.1	7.7	9.7
5	Mentor Graphics	16.0	12.8	14.7	14.7	8.4
6	NEC	11.7	14.0	14.0	0.1	8.0
7	Zuken-Redac	13.8	10.9	12.1	10.9	6.9
8	Wacom	23.3	11.8	10.6	-10.6	6.1
9	Hewlett-Packard	0.4	9.9	9.8	-1.3	5.6
10	Viewlogic Systems	-	6.7	7.3	10.1	4.2
11	Quickturn Design Systems	-	5.5	6.4	18.2	3.7
12	C. Itoh Techno-Science*	1.6	5.7	6.2	9.5	3.6
13	CrossCheck Technology	-	4.7	5.4	14.0	3.1
14	Sophia Systems*	4.5	3.1	3.2	2.6	1.8
15	COMPASS Design Automation	2.8	2.8	3.2	14.1	1.8
16	Contec Microelectronics	-	2.2	2.5	13.4	1.4
17	Autodesk	2.6	2.1	2.3	9.7	1.3
18	Zycad	3.8	3.3	1.6	-51.5	0.9
19	PROCAD GmbH	-	1.3	1.4	8.4	0.8
20	Summitt Design	-	0.7	1.0	42.9	0.5
21	APTIX	-	0.7	1.0	44.4	0.5
22	Intergraph	0.8	1.2	0.9	-27.1	0.5
23	ACTEL	-	0.5	0.9	78.9	0.5
24	Century Research Center	0.7	0.5	0.5	6.3	0.3
25	i-Logix	-	-	0.5	NA	0.3
26	PADS Software	-	0.3	0.3	-1.4	0.2
27	SIMUCAD	-	-	0.3	NA	0.2
28	Optem Engineering	-	-	0.3	NA	0.1
29	Design Acceleration	-	-	0.2	NA	0.1
30	Wiechers Datentechnik	-	-	0.1	NA	0.1
	Other Companies	33.6	17.8	16.9	-5.4	9.6
	All N.A. Companies	67.5	96.1	119.3	24.1	68.2
	All European Companies	-	1.3	1.5	17.7	0.9
	All Asian Companies	57.5	37.3	37.3	-0.0	21.3
	All Companies	158.5	152.5	174.9	14.7	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-7
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Japan Software Companies, IC Layout, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	30.4	21.0	24.4	16.3	36.0
2	OKURA*	6.3	10.8	14.3	32.7	21.1
3	Seiko*	17.3	13.4	14.1	5.2	20.7
4	Mentor Graphics	5.2	6.1	10.9	79.1	16.1
5	Fujitsu	3.4	5.0	5.0	0.4	7.4
6	COMPASS Design Automation	3.7	2.3	3.0	32.6	4.4
7	TSSI Japan*	1.6	1.6	2.2	32.7	3.2
8	ARCSYS	-	0.5	1.8	240.9	2.7
9	Summitt Design	-	1.2	1.8	44.6	2.7
10	Silicon Valley Research	2.9	1.8	1.5	-16.0	2.3
11	Marubeni Hytech*	0.7	1.2	1.5	26.1	2.1
12	NEC	1.0	1.2	1.1	-3.4	1.7
13	High Level Design Systems	-	0.5	0.6	22.6	0.8
14	Intergraph	1.2	0.5	0.3	-24.8	0.5
	Other Companies	2.6	3.1	3.2	3.5	4.7
	All N.A. Companies	43.3	33.9	44.4	31.1	65.5
	All European Companies	-	-	-	NA	-
	All Asian Companies	21.7	19.5	20.2	3.4	29.8
	All Companies	67.6	56.5	67.8	20.0	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-8
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Japan Software Companies, PCB, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Zuken-Redac	37.5	36.7	41.4	12.9	29.3
2	Yokogawa Digital Computer	11.9	15.4	17.2	11.3	12.2
3	CADIX	12.3	14.2	14.9	5.0	10.6
4	Fujitsu	8.0	14.9	14.8	-1.1	10.4
5	NEC	6.0	7.5	7.9	4.8	5.6
6	IBM	5.2	6.0	6.3	5.1	4.4
7	Altium*	5.2	6.0	6.3	5.1	4.4
8	Sharp*	9.6	5.6	6.2	11.1	4.4
9	Toshiba*	5.3	5.8	6.1	5.0	4.3
10	Mentor Graphics	4.6	5.4	5.5	2.2	3.9
11	Cadence	4.6	4.8	5.0	3.3	3.5
12	C. Itoh Techno-Science*	-	3.5	3.9	11.4	2.8
13	Hitachi	3.7	3.1	3.1	2.6	2.2
14	Uchida Yoko	3.1	2.3	2.4	4.8	1.7
15	PADS Software	-	2.9	2.2	-23.0	1.6
16	Wacom	-	1.3	1.5	15.2	1.1
17	PROCAD GmbH	-	1.3	1.5	15.3	1.1
18	TECHSPERT*	0.4	0.6	1.5	166.0	1.0
19	Sumisho Electronics*	0.3	1.2	1.3	12.1	0.9
20	Andor*	0.9	0.8	1.0	24.7	0.7
21	Sophia Systems*	0.8	0.8	0.9	16.3	0.7
22	Omron	0.6	0.8	0.9	4.9	0.6
23	Autodesk	0.5	0.4	0.5	9.7	0.3
24	Intergraph	0.4	0.5	0.5	-15.3	0.3
25	ULTImate Technology	0.4	0.4	0.5	28.6	0.3
26	Century Research Center	0.6	0.4	0.4	5.3	0.3
27	CAD-UL	-	0.1	0.1	8.8	0
	Other Companies	3.1	2.8	3.2	14.8	2.3
	All N.A. Companies	16.0	20.0	19.9	-0.6	14.1
	All European Companies	0.4	1.7	2.0	17.7	1.4
	All Asian Companies	98.1	107.4	116.1	8.1	82.2
	All Companies	117.6	132.0	141.3	7.1	100.0

* Companies contain VAR/Distributor Revenue, not counted in total

Source: Dataquest (March 1995)

Table A-9
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Japan Software Companies, All Applications, Technical Workstation

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Fujitsu	62.9	98.3	110.3	12.3	10.3
2	NEC	53.2	70.7	78.0	10.4	7.3
3	IBM	22.1	54.6	71.7	31.5	6.7
4	Hitachi	52.6	61.4	68.8	12.0	6.4
5	Toshiba*	46.2	55.1	61.5	11.5	5.7
6	Nihon Unisys	14.7	50.0	56.1	12.3	5.2
7	Info. Services Int'l. Dentsu*	37.1	50.5	55.5	9.9	5.2
8	C. Itoh Techno-Science*	24.4	46.8	54.6	16.6	5.1
9	Seiko*	40.0	49.5	54.4	10.0	5.1
10	Cadence	75.6	47.9	54.3	13.6	5.1
11	Zuken-Redac	51.7	48.1	54.1	12.5	5.0
12	Marubeni Hytech*	31.2	33.8	39.5	17.0	3.7
13	Synopsys	-	20.8	36.0	72.6	3.4
14	Sharp*	23.6	27.9	32.5	16.4	3.0
15	Mentor Graphics	25.8	24.3	30.8	26.8	2.9
16	SDRC	27.3	26.4	29.5	11.7	2.8
17	Altium*	-	19.2	29.4	53.5	2.7
18	Hewlett-Packard	15.0	29.1	28.8	-1.0	2.7
19	CADIX	17.6	20.3	21.8	7.2	2.0
20	Mutoh Industries*	24.0	19.1	21.4	12.3	2.0
21	Yokogawa Digital Computer	11.9	15.4	17.2	11.3	1.6
22	Tokyo Electron*	17.6	14.0	16.0	14.5	1.5
23	Toshiba Engineering*	9.8	13.4	15.1	13.4	1.4
24	OKURA*	6.3	10.8	14.3	32.7	1.3
25	Sumisho Electronics*	0.5	12.5	14.0	11.8	1.3
26	Dassault*	-	-	13.5	NA	1.3
27	Uchida Yoko	11.9	11.6	12.9	11.0	1.2
28	Computervision	23.7	23.1	12.6	-45.6	1.2
29	Ricoh*	4.4	9.4	11.6	23.5	1.1
30	Intergraph	11.7	11.9	10.3	-13.6	1.0
	Other Companies	88.6	63.1	71.7	13.6	6.7
	All N.A. Companies	233.6	307.3	357.8	16.4	33.4
	All European Companies	5.3	9.1	12.2	33.6	1.1
	All Asian Companies	462.4	562.5	630.3	12.1	58.8
	All Companies	789.8	942.0	1,071.9	13.8	100.0

* Companies contain VAR/Distributor Revenue, not counted in total

NA = Not applicable

Source: Dataquest (March 1995)

Table A-10
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Japan Software Companies, All Applications, Host Dependent

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Fujitsu	34.3	57.7	45.9	-20.6	44.5
2	IBM	28.1	23.9	21.5	-10.1	20.9
3	Nihon Unisys	29.6	13.0	10.4	-20.2	10.0
4	GDS	6.1	9.2	6.2	-32.3	6.1
5	Dassault*	-	-	5.8	NA	5.6
6	NEC	9.0	6.1	4.8	-21.3	4.7
7	Hitachi	7.3	6.1	4.8	-21.3	4.7
8	C. Itoh Techno-Science*	-	5.7	4.4	-21.9	4.3
9	MacNeal-Schwendler	6.6	8.8	3.8	-57.4	3.6
10	Mitsubishi Electric*	3.9	4.3	2.7	-36.4	2.6
11	Toyo Information Systems*	1.6	1.3	1.1	-20.1	1.0
12	Kozo Keikaku Engineering*	2.1	1.5	1.1	-30.9	1.0
13	Ansys	-	1.0	0.8	-20.4	0.8
14	Kubota Computer	-	0.9	0.7	-20.7	0.7
15	Informatix*	0.7	0.5	0.4	-22.9	0.4
16	Century Research Center	0.6	0.5	0.4	-22.2	0.3
17	PROCAD GmbH	-	0.3	0.2	-26.9	0.2
18	Pasco*	0.5	0.3	0.1	-59.4	0.1
19	ESRI	-	0.2	0.1	-50.0	0.1
20	Framasoft	-	0	0	46.0	0
21	SIMUCAD	-	-	0	NA	0
22	EDS Unigraphics	1.3	1.6	-	-100.0	-
23	MARC	-	1.2	-	-100.0	-
24	SDRC	1.0	0.3	-	-100.0	-
25	Kanematsu Semiconductor*	0.4	0.2	-	-100.0	-
26	Intergraph	0.3	0.1	-	-100.0	-
	Other Companies	7.1	3.4	2.4	-29.4	2.3
	All N.A. Companies	43.9	46.4	32.4	-30.1	31.4
	All European Companies	0.3	0.3	0.2	-21.7	0.2
	All Asian Companies	85.3	85.7	68.0	-20.6	66.0
	All Companies	136.5	135.7	103.0	-24.1	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-11
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Japan Software Companies, All Applications, Personal Computer

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	60.0	47.3	50.1	5.9	22.3
2	Altium*	60.0	47.3	50.1	5.9	22.3
3	Autodesk	49.3	40.1	44.0	9.7	19.6
4	Andor*	29.5	26.6	28.7	8.1	12.8
5	Mutoh Industries*	29.9	24.2	24.2	0.2	10.8
6	NEC	22.3	19.6	18.9	-3.2	8.4
7	Toshiba*	16.9	16.8	16.7	-1.0	7.4
8	Kozo Keikaku Engineering*	8.0	14.4	16.4	13.7	7.3
9	Hakuto*	15.6	16.6	16.3	-1.6	7.3
10	Wacom	26.8	16.9	15.7	-6.6	7.0
11	Hitachi	13.2	13.3	13.3	0.1	5.9
12	CPU	7.1	9.6	10.7	11.2	4.8
13	Fujitsu	17.2	9.8	9.7	-0.4	4.3
14	Sumisho Electronics*	4.4	7.2	7.9	9.4	3.5
15	Design Automation	9.3	7.3	7.7	5.6	3.4
16	Marubeni Hytech*	5.5	5.9	4.5	-24.2	2.0
17	Mitsubishi Electric*	3.5	4.0	4.2	5.5	1.9
18	Intergraph	2.0	3.5	4.0	14.8	1.8
19	Kanematsu Computer Systems*	2.8	3.3	3.5	6.7	1.6
20	Info. Services Int'l. Dentsu*	1.0	-	2.9	NA	1.3
21	Sophia Systems*	3.7	2.7	2.8	3.7	1.2
22	Viewlogic Systems	-	2.1	2.5	20.9	1.1
23	PADS Software	-	2.7	2.1	-20.9	1.0
24	ARGO GRAPHICS*	1.9	1.9	1.9	-1.5	0.9
25	MapInfo	-	0.3	1.7	505.6	0.8
26	Uchida Yoko	1.6	1.5	1.6	4.7	0.7
27	TECHSPERT*	0.4	0.6	1.5	166.0	0.7
28	Computervision	-	0.4	1.4	262.0	0.6
29	GDS	-	-	1.1	NA	0.5
30	Hewlett-Packard	-	0.6	1.0	56.5	0.4
	Other Companies	-	-	-	NA	-
	All N.A. Companies	111.6	100.2	113.5	13.3	50.6
	All European Companies	0.7	1.4	2.2	62.2	1.0
	All Asian Companies	132.0	108.8	108.7	-0.1	48.4
	All Companies	244.3	210.4	224.5	6.7	100.0

* Companies contain VAR/Distributor Revenue, not counted in total

NA = Not applicable

Source: Dataquest (March 1995)

Table B-1
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
All Japan Software Companies, All Applications, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	ACTEL	-	0.5	0.9	78.9	0.1
2	Adam Net	2.4	5.4	6.8	25.8	0.5
3	ADRA Systems	-	2.8	3.3	17.9	0.2
4	Altium*	60.0	66.5	79.6	19.6	5.7
5	Andor*	29.5	26.6	28.7	8.1	2.1
6	Ansys	-	4.0	4.3	9.0	0.3
7	Applicon	1.0	0.9	0.9	0.6	0.1
8	APTIX	-	0.7	1.0	44.4	0.1
9	ARCSYS	-	0.5	1.8	240.9	0.1
10	ARGO GRAPHICS*	3.1	3.4	3.6	4.4	0.3
11	Autodesk	52.5	42.6	46.8	9.7	3.3
12	C. Itoh Techno-Science*	24.4	52.5	59.0	12.5	4.2
13	CAD Centre	0.9	1.5	1.7	17.8	0.1
14	CAD-UL	-	0.1	0.1	8.8	0
15	Cadence	75.9	47.9	54.3	13.6	3.9
16	CADIX	17.6	20.3	21.8	7.2	1.6
17	CAMAX Manufacturing	-	0.9	1.8	97.5	0.1
18	Century Research Center	8.3	7.4	8.1	9.3	0.6
19	Cimatron	0.2	0.7	1.6	138.2	0.1
20	Cisigraph	2.5	2.7	3.3	21.2	0.2
21	COMPASS Design Automation	6.6	5.0	6.2	22.5	0.4
22	Computervision	23.7	23.5	13.9	-40.7	1.0
23	Concentra	1.0	0.9	1.8	96.1	0.1
24	Contec Microelectronics	-	2.2	2.5	13.4	0.2
25	CPU	7.1	9.6	10.7	11.2	0.8
26	CrossCheck Technology	-	4.7	5.4	14.0	0.4
27	Dassault*	-	-	19.3	NA	1.4
28	Delcam International	-	0.7	0.9	21.8	0.1
29	Design Acceleration	-	-	0.2	NA	0
30	Design Automation	9.3	7.3	7.7	5.6	0.6
31	EDS Unigraphics	8.9	10.8	9.3	-14.3	0.7
32	ESRI	-	3.1	3.8	23.7	0.3
33	Framasoft	-	0.2	0.3	19.1	0
34	Fujitsu	114.3	165.8	165.9	0.1	11.9
35	GDS	7.9	12.5	12.0	-3.8	0.9
36	Gerber Systems	-	1.8	1.4	-22.3	0.1
37	Graphisoft Group	-	0	0.1	156.7	0
38	Graphtec Engineering	6.9	7.0	7.9	12.4	0.6
39	Hakuto*	16.5	17.6	17.5	-0.7	1.3

(Continued)

Table B-1 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
All Japan Software Companies, All Applications, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
40	Hewlett-Packard	15.0	29.8	29.8	0.2	2.1
41	High Level Design Systems	-	0.5	0.6	22.6	0
42	Hitachi	73.1	80.8	86.9	7.5	6.2
43	Hitachi Zosen Info Systems	5.1	4.8	5.3	12.2	0.4
44	i-Logix	-	-	0.5	NA	0
45	IBM	110.3	125.8	143.4	13.9	10.3
46	Info. Services Int'l. Dentsu*	40.2	50.5	58.4	15.7	4.2
47	Informatix*	2.5	3.0	3.2	6.8	0.2
48	INS Engineering	7.3	7.9	8.8	11.8	0.6
49	Intergraph	14.0	15.5	14.2	-8.1	1.0
50	Intusoft	-	-	0	NA	0
51	Isicad CAD/CAM Systeme	0.9	0.3	0.4	18.2	0
52	Kanematsu Computer Systems*	4.3	6.2	6.8	9.3	0.5
53	Kanematsu Semiconductor*	1.1	0.5	-	-100.0	-
54	Kozo Keikaku Engineering*	16.7	24.2	27.0	11.2	1.9
55	Kubota Computer	8.3	6.1	7.1	15.3	0.5
56	MacNeal-Schwendler	11.5	14.5	12.1	-16.6	0.9
57	MapInfo	-	0.3	1.8	515.5	0.1
58	MARC	-	8.2	9.3	14.3	0.7
59	Marubeni Hytech*	36.7	39.7	44.0	10.8	3.1
60	Matra Datavision	1.3	1.3	1.5	15.1	0.1
61	MCS	-	-	0.8	NA	0.1
62	Mentor Graphics	25.8	24.3	31.1	28.1	2.2
63	Mitsubishi Electric*	12.9	14.6	14.0	-3.8	1.0
64	Mitsui Engineering	9.2	7.9	8.8	11.2	0.6
65	Moss Systems Group	-	-	0.1	NA	0
66	Mutoh Industries*	53.9	43.2	45.6	5.5	3.3
67	NEC	84.5	96.4	101.7	5.6	7.3
68	Nihon Itek*	5.5	5.0	6.4	28.7	0.5
69	Nihon Unisys	44.2	62.9	66.5	5.6	4.8
70	OKURA*	6.3	10.8	14.3	32.7	1.0
71	Omron	6.4	5.4	6.0	11.3	0.4
72	Optem Engineering	-	-	0.3	NA	0
73	PADS Software	-	3.2	2.5	-21.0	0.2
74	Pasco*	4.9	5.5	6.3	13.6	0.4
75	Pathtrace Engineering Systems	-	0	0	-	0
76	PCI Remote Sensing Corp	-	-	0.5	NA	0
77	PROCAD GmbH	-	2.7	3.0	11.9	0.2
78	Quickturn Design Systems	-	5.5	6.4	18.2	0.5

(Continued)

Table B-1 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
All Japan Software Companies, All Applications, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
79	Ricoh*	4.4	9.4	11.6	23.5	0.8
80	SDRC	28.3	26.7	29.5	10.5	2.1
81	Seiko*	44.0	49.5	54.4	10.0	3.9
82	Sharp*	23.9	27.9	32.5	16.4	2.3
83	Silicon Valley Research	2.9	1.8	1.5	-16.0	0.1
84	SIMUCAD	-	-	0.3	NA	0
85	Sophia Systems*	5.3	3.9	4.1	5.4	0.3
86	Star Informatic	-	0.2	0.2	6.7	0
87	Straessle Informationssysteme	-	-	0.8	NA	0.1
88	Sumisho Electronics*	4.9	19.7	21.9	11.0	1.6
89	Summitt Design	-	1.9	2.8	44.0	0.2
90	Synopsys	-	20.8	36.0	72.6	2.6
91	Technodia*	0.6	0.8	0.9	11.4	0.1
92	TECHSPERT*	0.4	0.6	1.5	166.0	0.1
93	Tokyo Electron*	17.6	14.0	16.0	14.5	1.1
94	Toshiba Engineering*	9.8	13.4	15.1	13.4	1.1
95	Toshiba*	66.4	72.0	78.1	8.6	5.6
96	Toyo Information Systems*	7.2	8.4	9.2	9.8	0.7
97	TSSI Japan*	1.6	1.6	2.2	32.7	0.2
98	Uchida Yoko	13.5	13.1	14.5	10.3	1.0
99	ULTImate Technology	0.4	0.4	0.5	28.6	0
100	Viewlogic Systems	-	6.7	7.3	10.1	0.5
101	Wacom	29.5	18.9	18.0	-4.5	1.3
102	Wiechers Datentechnik	-	-	0.2	NA	0
103	Yokogawa Digital Computer	11.9	15.4	17.2	11.3	1.2
104	Zuken-Redac	51.7	48.1	54.1	12.5	3.9
105	Zycad	3.8	3.3	1.6	-51.5	0.1
	Other Companies	99.6	66.4	73.3	10.4	5.2
	All N.A. Companies	389.0	453.8	503.7	11.0	36.0
	All European Companies	6.3	10.7	14.6	35.8	1.0
	All Asian Companies	679.6	757.0	807.0	6.6	57.7
	All Companies	1,174.5	1,288.0	1,398.6	8.6	100.0

* Companies contain VAR/Distributor Revenue, not counted in total

NA = Not applicable

Source: Dataquest (March 1995)

Table A-12
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, All Applications, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	0.5	22.0	24.1	9.7	13.5
2	Cadence	19.0	20.8	23.0	10.2	12.9
3	IBM	9.8	11.3	12.8	12.9	7.2
4	ESRI	-	7.8	9.7	24.2	5.4
5	Mentor Graphics	6.1	4.0	9.4	133.4	5.2
6	SDRC	1.8	7.5	8.3	10.5	4.7
7	Altium*	4.9	5.4	6.5	19.6	3.6
8	Zuken-Redac	2.1	4.8	5.6	15.8	3.1
9	EDS Unigraphics	1.3	5.8	5.4	-6.6	3.0
10	Computervision	9.8	9.2	5.4	-40.8	3.0
11	COMPASS Design Automation	2.0	4.0	5.2	28.4	2.9
12	Siemens Nixdorf Info systeme	3.1	2.9	5.0	72.1	2.8
13	Intergraph	4.1	4.9	4.4	-9.4	2.5
14	Investronica SA	0.6	0.9	3.0	247.1	1.7
15	Delcam International	-	2.0	2.5	24.0	1.4
16	Zycad	1.3	1.6	2.4	45.2	1.3
17	Viewlogic Systems	-	3.3	2.4	-27.5	1.3
18	Quickturn Design Systems	-	4.0	2.3	-40.9	1.3
19	Matra Datavision	0.1	1.5	2.3	52.0	1.3
20	IEZ	-	1.5	2.0	35.1	1.1
21	Ansys	-	1.1	1.8	73.3	1.0
22	Dassault*	-	-	1.8	NA	1.0
23	CAD Centre	0.5	0.8	1.7	117.9	0.9
24	CAMAX Manufacturing	-	0.6	1.5	172.9	0.8
25	Design Automation	0.2	1.0	1.4	47.9	0.8
26	ARCSYS	-	0.4	1.3	272.0	0.8
27	MCS	-	-	1.3	NA	0.7
28	MacNeal-Schwendler	2.7	2.2	1.2	-43.2	0.7
29	Summitt Design	-	0.8	1.1	44.0	0.6
30	Synopsys	-	2.0	1.1	-45.2	0.6
	Other Companies	17.5	19.6	21.4	9.3	12.0
	All N.A. Companies	59.4	116.9	130.0	11.2	72.9
	All European Companies	4.8	11.2	19.7	75.5	11.1
	All Asian Companies	2.5	5.9	7.1	20.2	4.0
	All Companies	84.2	153.6	178.2	16.0	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-13
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, Mechanical, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	8.4	9.1	10.4	14.2	15.5
2	Autodesk	0.2	8.8	9.6	9.7	14.4
3	SDRC	1.8	7.5	8.3	10.5	12.4
4	EDS Unigraphics	1.3	5.8	5.4	-6.6	8.1
5	Altium*	3.8	4.4	5.3	19.4	7.9
6	Computervision	9.3	7.8	4.7	-39.3	7.1
7	Investronica SA	0.6	0.9	3.0	247.1	4.4
8	Delcam International	-	2.0	2.5	24.0	3.7
9	Matra Datavision	0.1	1.5	2.3	52.0	3.4
10	Ansys	-	1.1	1.8	73.3	2.7
11	Dassault*	-	-	1.7	NA	2.5
12	CAMAX Manufacturing	-	0.6	1.5	172.9	2.2
13	Intergraph	0.9	1.7	1.4	-13.4	2.1
14	MCS	-	-	1.3	NA	1.9
15	MacNeal-Schwendler	2.7	2.2	1.2	-43.2	1.9
16	Gerber Systems	-	0.5	1.0	99.9	1.5
17	ADRA Systems	-	0.7	0.8	21.2	1.2
18	Design Automation	0.2	0.7	0.8	9.9	1.2
19	Cimatron	0.2	0.7	0.7	2.1	1.0
20	Straessle Informationssysteme	-	-	0.7	NA	1.0
21	Concentra	0.2	0.2	0.4	96.1	0.7
22	Tebis	-	0.2	0.4	114.3	0.6
23	Cisigraph	0.1	0.3	0.3	16.2	0.5
24	Applicon	0.3	0.3	0.3	0.6	0.5
25	Vero International Software	-	0.1	0.2	45.4	0.3
26	Toshiba Engineering*	0.1	0.1	0.1	-7.7	0.2
27	Framasoft	-	0.1	0.1	58.7	0.1
28	CAD Centre	0.1	0.2	0.1	-44.7	0.1
29	Hitachi Zosen Info Systems	0.1	0	0	-25.0	0
	Other Companies	5.3	6.5	7.5	15.7	11.2
	All N.A. Companies	25.2	46.2	48.4	4.7	72.2
	All European Companies	1.1	5.9	10.2	74.1	15.2
	All Asian Companies	0.3	0.9	0.9	5.7	1.4
	All Companies	31.8	59.4	67.0	12.7	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-14
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, AEC, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	0.2	9.4	10.4	9.7	48.1
2	IEZ	-	1.5	2.0	35.1	9.3
3	CAD Centre	0.4	0.6	1.6	164.0	7.4
4	Intergraph	1.3	1.7	1.5	-9.1	7.1
5	IBM	1.0	1.4	1.5	10.3	7.0
6	Computervision	0.3	1.4	0.7	-49.2	3.2
7	Altium*	0.7	0.5	0.6	36.8	3.0
8	Design Automation	0	0.3	0.6	156.0	3.0
9	Graphisoft Group	-	0	0.4	1146.7	1.7
10	Moss Systems Group	-	-	0.1	NA	0.7
11	Dassault*	-	-	0.1	NA	0.7
12	Informatix*	0	0	0	100.0	0.2
	Other Companies	0.5	2.5	2.7	9.1	12.4
	All N.A. Companies	2.9	13.9	14.1	1.6	65.5
	All European Companies	0.4	2.1	4.1	94.3	19.1
	All Asian Companies	0	0.3	0.6	156.0	3.0
	All Companies	3.9	18.7	21.5	15.2	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-15
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, GIS/Mapping, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	ESRI	-	7.8	9.7	24.2	37.1
2	Siemens Nixdorf Info systeme	3.1	2.9	5.0	72.1	19.1
3	Autodesk	0.1	2.4	2.6	9.7	10.1
4	Intergraph	1.4	1.1	1.2	5.6	4.5
5	PCI Remote Sensing Corp	-	-	0.8	NA	2.9
6	IBM	0.1	0.3	0.3	-1.1	1.3
7	UNISYS	0.1	0.1	0.2	50.0	0.8
	Other Companies	2.0	5.9	6.3	7.6	24.2
	All N.A. Companies	1.9	11.8	14.8	25.6	56.7
	All European Companies	3.1	2.9	5.0	72.1	19.1
	All Asian Companies	-	-	-	NA	-
	All Companies	7.0	20.6	26.1	27.0	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-16
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, EDA, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	19.0	20.8	23.0	10.2	35.2
2	Mentor Graphics	6.1	4.0	9.4	133.4	14.3
3	Zuken-Redac	2.1	4.8	5.6	15.8	8.5
4	COMPASS Design Automation	2.0	4.0	5.2	28.4	7.9
5	Zycad	1.3	1.6	2.4	45.2	3.7
6	Viewlogic Systems	-	3.3	2.4	-27.5	3.6
7	Quickturn Design Systems	-	4.0	2.3	-40.9	3.6
8	Autodesk	0	1.3	1.4	9.7	2.2
9	ARCSYS	-	0.4	1.3	272.0	2.1
10	Summitt Design	-	0.8	1.1	44.0	1.7
11	Synopsys	-	2.0	1.1	-45.2	1.7
12	PADS Software	-	1.0	0.8	-21.0	1.2
13	IBM	0.4	0.5	0.5	5.1	0.8
14	Altium*	0.4	0.5	0.5	5.1	0.8
15	ACTEL	0.1	0.2	0.4	126.0	0.7
16	Silicon Valley Research	-	0.4	0.4	-12.1	0.6
17	Intergraph	0.5	0.4	0.3	-33.3	0.5
18	Norlinvest Ltd.	0.2	0.2	0.3	18.2	0.4
19	APTIX	-	0.2	0.2	44.4	0.4
20	Seiko*	0.3	0.2	0.2	11.1	0.3
21	SIMUCAD	-	-	0.1	NA	0.2
22	i-Logix	-	-	0.1	NA	0.2
23	CAD-UL	-	0.1	0.1	-2.1	0.2
24	Royal Digital Centers	-	0.1	0.1	14.3	0.1
25	ULTImate Technology	0.1	0.1	0.1	60.0	0.1
26	Contec Microelectronics	-	0	0.1	25.0	0.1
27	3Soft	-	-	0	NA	0
28	Intusoft	-	-	0	NA	0
29	Integrity Engineering	-	-	0	NA	0
	Other Companies	9.4	7.0	6.5	-7.0	10.0
	All N.A. Companies	29.4	45.0	52.7	17.0	80.7
	All European Companies	0.2	0.4	0.4	18.4	0.7
	All Asian Companies	2.1	4.8	5.6	15.8	8.5
	All Companies	41.2	57.2	65.2	13.9	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-17
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, ECAE, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	10.3	9.6	10.5	9.9	26.8
2	Mentor Graphics	3.8	3.2	7.9	151.7	20.1
3	COMPASS Design Automation	0.8	2.2	2.7	21.3	6.8
4	Zuken-Redac	0.6	2.3	2.6	12.4	6.7
5	Zycad	1.3	1.6	2.4	45.2	6.1
6	Viewlogic Systems	-	3.3	2.4	-27.5	6.0
7	Quickturn Design Systems	-	4.0	2.3	-40.9	5.9
8	Autodesk	0	1.1	1.2	9.7	3.1
9	Synopsys	-	2.0	1.1	-45.2	2.8
10	ACTEL	0.1	0.2	0.4	126.0	1.1
11	Summitt Design	-	0.3	0.4	42.9	1.0
12	APTIX	-	0.2	0.2	44.4	0.6
13	Seiko*	0.3	0.2	0.2	11.1	0.5
14	Intergraph	0.1	0.2	0.2	-24.1	0.4
15	SIMUCAD	-	-	0.1	NA	0.4
16	i-Logix	-	-	0.1	NA	0.3
17	PADS Software	-	0.1	0.1	-1.4	0.2
18	Norlinvest Ltd.	0	0.1	0.1	33.3	0.2
19	Contec Microelectronics	-	0	0.1	25.0	0.1
20	3Soft	-	-	0	NA	0.1
21	Intusoft	-	-	0	NA	0
22	Integrity Engineering	-	-	0	NA	0
	Other Companies	8.6	5.1	4.5	-13.0	11.3
	All N.A. Companies	16.4	27.9	32.2	15.5	81.8
	All European Companies	0	0.1	0.1	33.3	0.2
	All Asian Companies	0.6	2.3	2.6	12.4	6.7
	All Companies	25.6	35.4	39.4	11.2	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-18
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, IC Layout, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	7.6	9.1	10.3	12.9	61.1
2	COMPASS Design Automation	1.1	1.8	2.5	37.0	14.7
3	ARCSYS	-	0.4	1.3	272.0	7.9
4	Summitt Design	-	0.5	0.7	44.6	4.4
5	Mentor Graphics	1.2	0.1	0.5	265.6	2.7
6	Silicon Valley Research	-	0.4	0.4	-12.1	2.1
7	Intergraph	0.2	0.1	0.1	-39.0	0.4
	Other Companies	0.6	1.1	1.1	-0.1	6.7
	All N.A. Companies	10.2	12.4	15.7	26.5	93.3
	All European Companies	-	-	-	NA	-
	All Asian Companies	-	-	-	NA	-
	All Companies	10.8	13.6	16.9	24.3	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-19
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, PCB, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Zuken-Redac	1.6	2.5	2.9	19.0	33.6
2	Cadence	1.1	2.1	2.1	-0.1	24.1
3	Mentor Graphics	1.1	0.7	1.0	32.3	11.1
4	PADS Software	-	0.9	0.7	-23.0	8.0
5	IBM	0.4	0.5	0.5	5.1	5.8
6	Altium*	0.4	0.5	0.5	5.1	5.8
7	Autodesk	0	0.2	0.2	9.7	2.8
8	Norlinvest Ltd.	0.1	0.2	0.2	12.5	2.1
9	CAD-UL	-	0.1	0.1	-2.1	1.1
10	Intergraph	0.1	0.1	0.1	-42.4	0.9
11	Royal Digital Centers	-	0.1	0.1	14.3	0.9
12	ULTImate Technology	0.1	0.1	0.1	60.0	0.9
	Other Companies	0.6	0.7	0.8	16.1	8.7
	All N.A. Companies	2.9	4.7	4.7	0.5	53.6
	All European Companies	0.2	0.3	0.4	15.5	4.1
	All Asian Companies	1.6	2.5	2.9	19.0	33.6
	All Companies	5.3	8.1	8.7	8.0	100.0

* Companies contain VAR/Distributor Revenue, not counted in total

Source: Dataquest (March 1995)

Table A-20
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, All Applications, Technical Workstation

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Cadence	18.9	20.8	23.0	10.2	17.8
2	Mentor Graphics	6.1	4.0	9.2	129.4	7.1
3	SDRC	1.7	7.5	8.3	11.7	6.5
4	ESRI	-	5.6	7.2	29.4	5.6
5	IBM	2.2	5.0	6.4	29.4	5.0
6	Zuken-Redac	2.1	4.8	5.6	15.8	4.3
7	EDS Unigraphics	1.1	5.0	5.4	9.4	4.2
8	COMPASS Design Automation	1.9	4.0	5.2	28.4	4.0
9	Computervision	9.8	9.0	4.9	-45.6	3.8
10	Intergraph	3.4	3.8	3.2	-15.5	2.5
11	Altium*	-	1.6	2.4	53.5	1.9
12	Zycad	1.3	1.6	2.4	45.2	1.9
13	Quickturn Design Systems	-	4.0	2.3	-40.9	1.8
14	Matra Datavision	0.1	1.5	2.2	53.8	1.7
15	Delcam International	-	1.9	2.2	14.9	1.7
16	IEZ	-	1.5	1.9	28.0	1.5
17	Siemens Nixdorf Info systeme	2.7	1.9	1.9	-1.6	1.5
18	CAD Centre	0.5	0.8	1.7	117.9	1.3
19	Viewlogic Systems	-	2.2	1.5	-30.5	1.2
20	Autodesk	0	1.3	1.4	9.7	1.1
21	ARCSYS	-	0.4	1.3	272.0	1.0
22	Dassault*	-	-	1.3	NA	1.0
23	Synopsys	-	2.0	1.1	-45.2	0.9
24	Summitt Design	-	0.7	1.1	44.0	0.8
25	Gerber Systems	-	0.5	1.0	99.9	0.8
26	CAMAX Manufacturing	-	0.6	0.9	57.8	0.7
27	MacNeal-Schwendler	1.1	0.8	0.8	2.4	0.7
28	Ansys	-	0.6	0.8	33.3	0.6
29	Straessle Informationssysteme	-	-	0.7	NA	0.5
30	ADRA Systems	-	0.5	0.7	42.6	0.5
	Other Companies	19.7	18.7	20.1	7.6	15.6
	All N.A. Companies	48.2	81.3	91.3	12.3	70.9
	All European Companies	3.5	8.3	11.6	39.8	9.0
	All Asian Companies	2.3	5.0	5.7	14.9	4.4
	All Companies	73.8	113.3	128.8	13.7	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-21
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, All Applications, Host Dependent

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	IBM	2.8	2.5	2.3	-9.0	47.6
2	Siemens Nixdorf Info systeme	0.4	0.7	0.8	13.6	15.6
3	Ansys	-	0.3	0.7	155.6	14.4
4	Dassault*	-	-	0.5	NA	11.3
5	MacNeal-Schwendler	1.5	1.3	0.4	-71.0	8.1
6	ESRI	-	0.4	0.2	-50.6	4.0
7	Framasoft	-	0	0	-2.6	0.2
8	SIMUCAD	-	-	0	NA	0.1
9	EDS Unigraphics	0.2	0.9	-	-100.0	-
10	SDRC	0.1	0.1	-	-100.0	-
11	Intergraph	0.1	0.1	-	-100.0	-
	Other Companies	1.7	0.8	0.5	-38.9	10.0
	All N.A. Companies	5.1	5.5	3.6	-35.4	74.2
	All European Companies	0.4	0.7	0.8	13.4	15.8
	All Asian Companies	-	-	-	NA	-
	All Companies	7.2	7.0	4.8	-31.1	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

Table A-22
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
Top 30 Asia/Pacific Software Companies, All Applications, Personal Computer

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	Autodesk	0.5	20.6	22.6	9.7	51.6
2	IBM	4.9	3.8	4.1	5.9	9.3
3	Altium*	4.9	3.8	4.1	5.9	9.3
4	Investronica SA	0.6	0.9	3.0	247.1	6.7
5	Siemens Nixdorf Info systeme	-	0.3	2.4	634.4	5.4
6	ESRI	-	1.8	2.3	24.4	5.2
7	Design Automation	0.2	1.0	1.4	47.9	3.2
8	Intergraph	0.6	1.1	1.2	18.5	2.8
9	Viewlogic Systems	-	1.0	0.8	-21.1	1.9
10	MCS	-	-	0.8	NA	1.7
11	PADS Software	-	0.8	0.7	-20.9	1.5
12	CAMAX Manufacturing	-	-	0.6	NA	1.4
13	Computervision	-	0.2	0.5	228.5	1.2
14	Graphisoft Group	-	0	0.4	1146.7	0.9
15	Tebis	-	0.2	0.4	92.3	0.9
16	Ansys	-	0.2	0.3	83.3	0.8
17	Cimatron	0.1	0.3	0.3	2.1	0.6
18	Delcam International	-	0.1	0.3	239.7	0.6
19	ACTEL	0.1	0.1	0.3	124.4	0.6
20	Norlinvest Ltd.	0.2	0.2	0.3	18.2	0.6
21	PCI Remote Sensing Corp	-	-	0.2	NA	0.5
22	Vero International Software	-	0.1	0.2	45.4	0.5
23	Mentor Graphics	-	-	0.2	NA	0.4
24	ADRA Systems	-	0.2	0.1	-31.6	0.3
25	APTIX	-	0.1	0.1	44.4	0.3
26	IEZ	-	-	0.1	NA	0.2
27	CAD-UL	-	0.1	0.1	4.1	0.2
28	ULTImate Technology	0.1	0.1	0.1	60.0	0.2
29	SIMUCAD	-	-	0.1	NA	0.1
30	Summitt Design	-	0	0.1	44.0	0.1
	Other Companies	-	-	-	NA	-
	All N.A. Companies	6.0	30.1	35.1	16.6	79.9
	All European Companies	0.8	2.3	7.4	223.9	16.8
	All Asian Companies	0.2	1.0	1.4	47.9	3.2
	All Companies	7.1	33.3	43.9	31.7	100.0

* Companies contain VAR/Distributor Revenue, not counted in total

NA = Not applicable

Source: Dataquest (March 1995)

Table B-2
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
All Asia/Pacific Software Companies, All Applications, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
1	3Soft	-	-	0	NA	0
2	ACTEL	0.1	0.2	0.4	126.0	0.2
3	ADRA Systems	-	0.7	0.8	21.2	0.4
4	Altium*	4.9	5.4	6.5	19.6	3.6
5	Ansys	-	1.1	1.8	73.3	1.0
6	Applicon	0.3	0.3	0.3	0.6	0.2
7	APTIX	-	0.2	0.2	44.4	0.1
8	ARCSYS	-	0.4	1.3	272.0	0.8
9	Autodesk	0.5	22.0	24.1	9.7	13.5
10	CAD Centre	0.5	0.8	1.7	117.9	0.9
11	CAD-UL	-	0.1	0.1	-2.1	0.1
12	Cadence	19.0	20.8	23.0	10.2	12.9
13	CAMAX Manufacturing	-	0.6	1.5	172.9	0.8
14	Cimatron	0.2	0.7	0.7	2.1	0.4
15	Cisigraph	0.1	0.3	0.3	16.2	0.2
16	COMPASS Design Automation	2.0	4.0	5.2	28.4	2.9
17	Computervision	9.8	9.2	5.4	-40.8	3.0
18	Concentra	0.2	0.2	0.4	96.1	0.2
19	Contec Microelectronics	-	0	0.1	25.0	0
20	Dassault*	-	-	1.8	NA	1.0
21	Delcam International	-	2.0	2.5	24.0	1.4
22	Design Automation	0.2	1.0	1.4	47.9	0.8
23	EDS Unigraphics	1.3	5.8	5.4	-6.6	3.0
24	ESRI	-	7.8	9.7	24.2	5.4
25	Framasoft	-	0.1	0.1	58.7	0.1
26	Gerber Systems	-	0.5	1.0	99.9	0.6
27	Graphisoft Group	-	0	0.4	1146.7	0.2
28	Hitachi Zosen Info Systems	0.1	0	0	-25.0	0
29	i-Logix	-	-	0.1	NA	0.1
30	IBM	9.8	11.3	12.8	12.9	7.2
31	IEZ	-	1.5	2.0	35.1	1.1
32	Informatix*	0	0	0	100.0	0
33	Integrity Engineering	-	-	0	NA	0
34	Intergraph	4.1	4.9	4.4	-9.4	2.5
35	Intusoft	-	-	0	NA	0
36	Investronica SA	0.6	0.9	3.0	247.1	1.7
37	MacNeal-Schwendler	2.7	2.2	1.2	-43.2	0.7
38	Matra Datavision	0.1	1.5	2.3	52.0	1.3
39	MCS	-	-	1.3	NA	0.7

(Continued)

Table B-2 (Continued)
1994 CAD/CAM/CAE/GIS Software Market Share Table (Revenue in $M)
All Asia/Pacific Software Companies, All Applications, All Platforms

Rank	Company Name	1992	1993	1994	1993-94 Growth (%)	1994 Share of Market (%)
40	Mentor Graphics	6.1	4.0	9.4	133.4	5.2
41	Moss Systems Group	-	-	0.1	NA	0.1
42	Norlinvest Ltd.	0.2	0.2	0.3	18.2	0.1
43	PADS Software	-	1.0	0.8	-21.0	0.4
44	PCI Remote Sensing Corp	-	-	0.8	NA	0.4
45	Quickturn Design Systems	-	4.0	2.3	-40.9	1.3
46	Royal Digital Centers	-	0.1	0.1	14.3	0
47	SDRC	1.8	7.5	8.3	10.5	4.7
48	Seiko*	0.3	0.2	0.2	11.1	0.1
49	Siemens Nixdorf Info systeme	3.1	2.9	5.0	72.1	2.8
50	Silicon Valley Research	-	0.4	0.4	-12.1	0.2
51	SIMUCAD	-	-	0.1	NA	0.1
52	Straessle Informationssysteme	-	-	0.7	NA	0.4
53	Summitt Design	-	0.8	1.1	44.0	0.6
54	Synopsys	-	2.0	1.1	-45.2	0.6
55	Tebis	-	0.2	0.4	114.3	0.2
56	Toshiba Engineering*	0.1	0.1	0.1	-7.7	0.1
57	ULTImate Technology	0.1	0.1	0.1	60.0	0
58	UNISYS	0.1	0.1	0.2	50.0	0.1
59	Vero International Software	-	0.1	0.2	45.4	0.1
60	Viewlogic Systems	-	3.3	2.4	-27.5	1.3
61	Zuken-Redac	2.1	4.8	5.6	15.8	3.1
62	Zycad	1.3	1.6	2.4	45.2	1.3
	Other Companies	17.5	19.6	21.4	9.3	12.0
	All N.A. Companies	59.4	116.9	130.0	11.2	72.9
	All European Companies	4.8	11.2	19.7	75.5	11.1
	All Asian Companies	2.5	5.9	7.1	20.2	4.0
	All Companies	84.2	153.6	178.2	16.0	100.0

* Companies contain VAR/Distributor Revenue, not counted in total
NA = Not applicable
Source: Dataquest (March 1995)

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