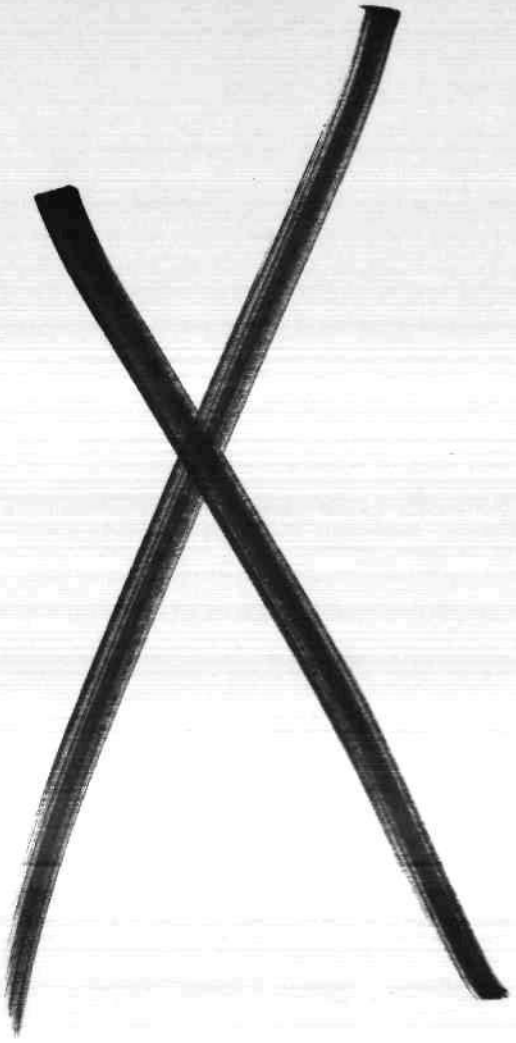

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CAD/CAM/CAE and GIS
GIS and AEC Market Share Update

Market Statistics
1994

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Product Code: CAEC-WW-MS-9403
Publication Date: July 11, 1994

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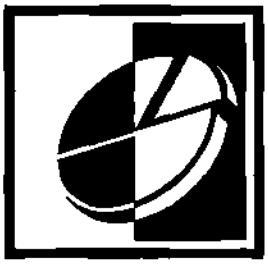

Market Statistics

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Note: All tables show estimated data.

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Note: All tables show estimated data.

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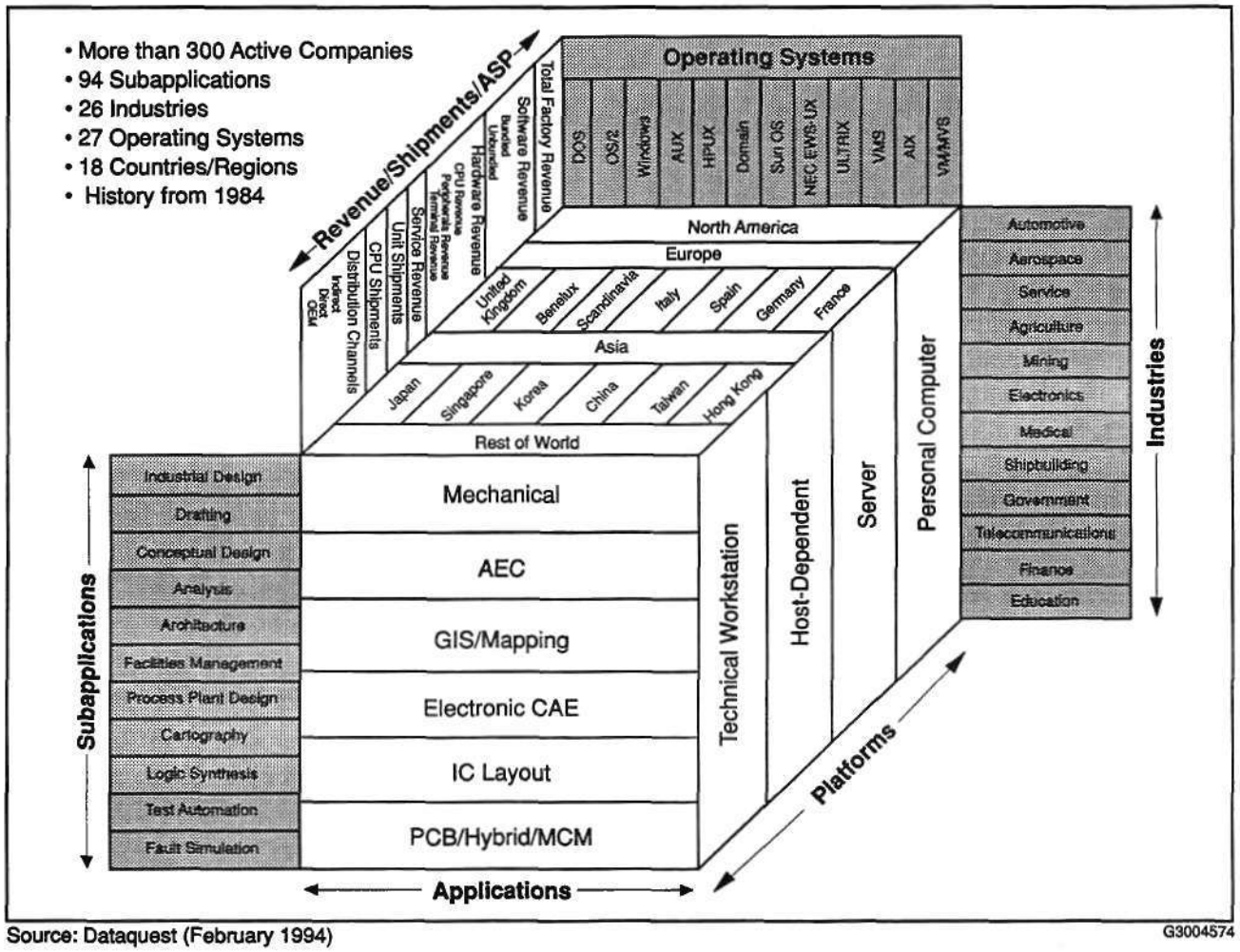
CAD/CAM/CAE and GIS GIS and AEC Market Share Update

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.

Figure 1
CAD/CAM/CAE/GIS Market Database



Source: Dataquest (February 1994)

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Table 1
CAD/CAM/CAE/GIS 1992-1993 Market Summary

	Software Revenue 1992 ($M)	Software Revenue 1993 ($M)	Growth Rate (%)	Total Revenue 1992 ($M)	Total Revenue 1993 ($M)	Growth Rate (%)	Hardware Unit Shipments 1992	Hardware Unit Shipments 1993	Growth Rate (%)
Application									
Mechanical	2,170.4	2,294.7	5.7	7,988.2	7,862.7	-1.6	302,347	303,364	0.3
AEC	746.9	794.1	6.3	2,356.5	2,444.0	3.7	178,629	198,075	10.9
GIS/Mapping	580.1	662.2	14.2	2,005.6	2,179.1	8.7	86,513	102,624	18.6
Electronic CAE	741.5	797.1	7.5	2,086.4	2,271.7	8.9	94,176	99,129	5.3
IC Layout	212.7	203.0	-4.6	628.4	676.4	7.6	9,771	13,049	33.5
PCB/Hybrid/MCM	265.9	271.2	2.0	870.9	900.2	3.4	35,110	38,030	8.3
Total	4,717.4	5,022.2	6.5	15,936.0	16,334.2	2.5	706,546	754,271	6.8
Region									
North America	1,562.5	1,754.6	12.3	5,253.5	5,690.7	8.3	286,939	325,318	13.4
Europe	1,693.8	1,608.9	-5.0	5,755.5	5,432.7	-5.6	231,062	240,603	4.1
Asia	1,352.7	1,534.4	13.4	4,601.2	4,830.6	5.0	169,839	163,620	-3.7
Rest of World	108.5	124.3	14.6	325.9	380.2	16.7	18,706	24,730	32.2
Total	4,717.4	5,022.2	6.5	15,936.0	16,334.2	2.5	706,546	754,271	6.8
In Local Currencies									
Europe (ECU)	1,301.8	1,378.2	5.9	4,423.7	4,653.7	5.2			
Asia (yen)	170,895	170,093	-0.5	581,318	535,468	-7.9			
Platform									
Technical Workstation	3,060.1	3,312.8	8.3	9,640.0	10,458.3	8.5	173,705	194,848	12.2
Host-Dependent	360.2	306.1	-15.0	2,436.6	1,754.7	-28.0	34,524	28,573	-17.2
Server	140.0	176.2	25.9	906.3	1,056.8	16.6	11,566	13,381	15.7
Personal Computer	1,157.1	1,227.1	6.1	2,953.2	3,064.4	3.8	486,751	517,469	6.3
Total	4,717.4	5,022.2	6.5	15,936.0	16,334.2	2.5	706,546	754,271	6.8

Source: Dataquest (July 1994)

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A companion article analyzing major shifts in the 1993 market was published in our *Dataquest Perspective*, dated June 27, 1994.

Table 1 summarizes the performance in various segments of the CAD/CAM/CAE/GIS markets in 1993 versus 1992. With the devaluation of the dollar against the yen (¥126.34/$ in 1992 versus ¥110.85/$ in 1993) and the appreciation of the dollar against the ECU (ECU 0.7686/$ in 1992 versus ECU 0.8566/$ in 1993), actual growth is not as it appears when denominated in U.S. dollars. With 75 percent of the Asian market in Japan, denominating in yen gives a rough indication of real growth in the Asian market, which was a negative 7.9 percent.

About This Document

This document contains Dataquest's detailed market share information on the CAD/CAM/CAE/GIS industry. We no longer publish worldwide all-application market statistics for the entire CAD/CAM/CAE/GIS industry. This data is available by calling Suzanne Snygg at (408) 437-8241. The category "Other Companies" is the aggregation of small companies. More detailed data on these markets may be requested through our Client Inquiry service.

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.

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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 products). Schematic capture and simulation are examples of electronic CAE applications.
- 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 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. Market share data is available for each of these countries.

Asia

Asia includes Japan, Singapore, Taiwan, Korea, China, and Hong Kong. Market share data is available for each of these countries.

Rest of World

Rest of World includes all other countries including Australia, New Zealand, Oceania, 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

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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.

Server

A server is a computer that transparently provides its resources for use by other computer systems. It is a system on a network that provides specific functionality to other computer systems: the clients. Functions include file storage, database access, and compute capability. Dataquest tracks the following major categories of servers used for CAD/CAM/CAE and GIS applications:

- Compute Servers—These systems provide capabilities for solving numerical problems (for example, simulations, statistical calculations, and simultaneous partial differential equations). System features usually include high-speed computational capabilities (for example, vector and parallel processing) and large memories.
- Print Servers—These systems provide access to printers, specialized printing applications software, and print-spooling resources to a network.
- File Servers—These systems provide mass storage capability to clients on a network. Services can range from temporary storage of working files to long-term backup and archive systems.
- Database Servers—These systems manage databases as a shared resource to a network. These servers handle such functions as physical data storage, data security, and high-level queries and can access stored information at the record level.

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.

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- 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 bundled (part of a turnkey system) and unbundled application software.
- 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, or 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.) The following are examples of the job titles of people contacted for information:

- President and CEO
- Vice president and general manager
- Vice president of marketing
- Vice president, strategic product planning
- Director of strategic planning

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- 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; Dataquest also 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.

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Publishing Schedule

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

- Market share data is available January 31. All tables will be published and distributed to clients by March 31.
- Forecasting from the market share tables provides a five-year forecast period, available after March 31. The books will be shipped by May 31.
- Final updated market share tables, based on additional data collection and analysis, will be completed by May 31. 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 30.

Database Changes

Tables 2 through 5 show changes made to the database since last year's market share update. PC clone manufacturers are no longer tracked individually. We continue to show PC sales by IBM, Hewlett-Packard, and Digital, which also sell other platforms. The 1993 sales of GeoVision Systems to SHL Systemhouse, Computervision-GIS to Unisys, Racal-Redac to Zuken, Chronologic to Viewlogic, ASG to Softdesk, CDC's mechanical software product to ICEM Technologies, PDA to MacNeal-Schwendler, and Logic Modeling Corporation to Synopsys; the merger of Sysdeco and SysScan; and the change of GDS to Convergent Group will be recognized in market reporting for 1994.

Table 2
Companies Renamed

Company Name	Renamed to:
Alper Systems	Sysdeco Ltd.
Areon	Kreon
CADAM	Altium
Catalpa	Catalpa groupe Missler
Geotrace Technologies	Cadlynx
Logic Control	Logic Systems Designers
RIB/RZB	RIB Bausoftware
Sener Sistemas Marinos	Sener Inginiera y Sistemas
STI Strassle	Strassle Informationssysteme
Test Systems Strategies	Summitt

Source: Dataquest (July 1994)

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

Company Name	Acquired by, Merged with, Technology Sold to:
ANACAD & Electrical Eng. Software	ANACAD-EES
Aries Technology	MacNeal-Schwendler
CAD Language Systems	Compass Design Automation
CAD/CAM Group	Data I/O
Comdisco	Cadence
DAT Standard info ssystemes	ISD Software
EEsof	Hewlett-Packard
Expertest	Sunrise Test
Fides Industrielle Automation	Strassle
HP Cade	Hewlett-Packard
Inca	Zycad
Infocel	Understanding Systems
PiE Design	Quickturn Design Systems
Quad Design Technology	Viewlogic
Wisdom Systems	ICAD

Source: Dataquest (July 1994)

Table 4
Companies Deleted

Company Removed from Database:
European
Asicom
Club Informatico SA
DATAID Technologies
DECISA
Micrograph
Olivetti*
Research Machines*
North American
Bechtel
CADLYNX
Compaq*
Dell Computer*
Engineering Systems Corporation
GeoQuest
Mega CADD
NCR Microelectronics
Object Design
Objectivity
Ontos
Quicklogic
The CAD Group
Ultimap

*We no longer follow individual PC clone makers.
Source: Dataquest (July 1994)

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Table 5
Companies Added

Company Added to Database:
European
APIC Systemes
ISD Software
SPEED
Ultimate Technology
North American
AT&T
Aptix
ARC SYS
EAGLE Point
Earth Resource Mapping
Graftek
Graphic Data Systems (GDS)
Model Technology
Systems Science Inc.
Tactics Int'l Ltd.
VLSI Libraries
Asian
Adam Net
Kozo
Okura
Tachnodia
TECHSPERT
Toshiba Engineering
Yokogawa Digital Computer

Source: Dataquest (July 1994)

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Table 6
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	401.0	182.8	112.0	7,499	18.4%	16.6%	16.9%	7.3%
Sun Microsystems	167.3	136.2	.0	4,972	7.7%	12.3%	.0%	4.8%
IBM	154.7	135.3	5.5	12,639	7.1%	12.3%	.8%	12.3%
Siemens Nixdorf Info systeme	135.8	46.1	51.4	2,200	6.2%	4.2%	7.8%	2.1%
ESRI	135.0	.0	108.9	0	6.2%	.0%	16.4%	.0%
Digital	133.0	105.4	.1	6,658	6.1%	9.5%	.0%	6.5%
Landmark Graphics	102.3	24.2	45.3	334	4.7%	2.2%	6.8%	.3%
Hewlett-Packard	78.3	67.0	.0	5,593	3.6%	6.1%	.0%	5.4%
GDS	59.9	27.6	26.4	1,082	2.7%	2.5%	4.0%	1.1%
Fujitsu	57.7	29.7	20.2	1,172	2.6%	2.7%	3.1%	1.1%
Mitsubishi Electric	49.1	38.4	6.1	777	2.3%	3.5%	.9%	.8%
Autodesk	44.1	.0	44.1	0	2.0%	.0%	6.7%	.0%
Data General	38.5	30.9	1.4	2,186	1.8%	2.8%	.2%	2.1%
ICL	26.0	15.2	9.0	749	1.2%	1.4%	1.4%	.7%
Smallworld Systems	25.2	1.2	15.0	47	1.2%	.1%	2.3%	.0%
Sysdeco Ltd.	23.7	11.9	5.9	207	1.1%	1.1%	.9%	.2%
Silicon Graphics	23.1	20.3	.0	732	1.1%	1.8%	.0%	.7%
Uchida Yoko	22.5	13.3	8.2	624	1.0%	1.2%	1.2%	.6%
Autometric	22.0	6.0	3.0	255	1.0%	.5%	.5%	.2%
Genasys II	21.5	2.1	15.1	96	1.0%	.2%	2.3%	.1%
MapInfo	20.1	.0	17.3	0	.9%	.0%	2.6%	.0%

(Continued)

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Table 6 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Hitachi	18.9	8.9	8.1	726	.9%	.8%	1.2%	.7%
Apple Computer	18.6	18.6	.0	4,847	.9%	1.7%	.0%	4.7%
Toshiba—No OEM	16.2	8.1	6.5	180	.7%	.7%	1.0%	.2%
Mitsui Engineering	14.7	10.2	3.0	120	.7%	.9%	.5%	.1%
Strategic Mapping	13.6	.0	9.3	0	.6%	.0%	1.4%	.0%
Laser-Scan	13.5	4.0	6.0	83	.6%	.4%	.9%	.1%
GeoVision Systems	13.5	1.0	7.3	26	.6%	.1%	1.1%	.0%
Unisys	11.5	2.6	4.7	113	.5%	.2%	.7%	.1%
ETAK	11.4	.5	10.8	23	.5%	.0%	1.6%	.0%
Synercom	11.0	.0	4.4	0	.5%	.0%	.7%	.0%
ERDAS	9.6	2.2	6.7	170	.4%	.2%	1.0%	.2%
Straessle Informationssysteme	9.4	.7	6.5	75	.4%	.1%	1.0%	.1%
Sysscan	9.3	3.7	2.7	96	.4%	.3%	.4%	.1%
PCI Remote Sensing Corp	9.0	.0	9.0	0	.4%	.0%	1.4%	.0%
Enghouse Systems Ltd.	8.8	.4	7.5	42	.4%	.0%	1.1%	.0%
NEC	8.1	5.1	2.3	308	.4%	.5%	.3%	.3%
INS Engineering	7.9	3.9	4.0	22	.4%	.4%	.6%	.0%
Radian Corporation	7.1	.0	4.7	0	.3%	.0%	.7%	.0%
Kohns & Poppenhaeger	6.6	3.0	2.6	76	.3%	.3%	.4%	.1%
APIC Systemes	6.3	.0	4.2	0	.3%	.0%	.6%	.0%
Star Informatic	6.0	1.2	3.8	82	.3%	.1%	.6%	.1%

(Continued)

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Table 6 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Dynamic Graphics	5.6	.0	3.6	0	.3%	.0%	.5%	.0%
Computervision	5.4	1.6	1.3	64	.2%	.1%	.2%	.1%
Clemessy Geocity	5.0	2.8	1.0	28	.2%	.3%	.2%	.0%
Century Research Center	4.7	2.5	1.8	33	.2%	.2%	.3%	.0%
GeoGraphix	4.3	.0	3.2	0	.2%	.0%	.5%	.0%
CADIX	4.2	1.8	2.0	23	.2%	.2%	.3%	.0%
Earth Resource Mapping	4.1	.0	3.7	0	.2%	.0%	.6%	.0%
Intera Tydac	3.8	.0	3.8	0	.2%	.0%	.6%	.0%
Ground Modelling Systems	3.5	1.6	1.5	291	.2%	.1%	.2%	.3%
Tactics Int'l	3.5	.0	3.5	0	.2%	.0%	.5%	.0%
Terr-Mar Resource Info Svs	3.0	.5	1.9	46	.1%	.0%	.3%	.0%
Mutoh Industries—No OEM	2.8	1.6	.9	67	.1%	.1%	.1%	.1%
Terra Sciences	2.8	.0	2.8	0	.1%	.0%	.4%	.0%
PAFEC	2.7	.9	1.3	38	.1%	.1%	.2%	.0%
Geometria GIS Systems House	2.6	.2	.1	14	.1%	.0%	.0%	.0%
Facility Mapping Systems	2.3	.0	2.1	0	.1%	.0%	.3%	.0%
RIB/Bausoftware	2.0	.2	1.6	22	.1%	.0%	.2%	.0%
Ziegler Informatics	2.0	.0	2.0	0	.1%	.0%	.3%	.0%
Generation 5 Technology	1.9	.0	1.0	0	.1%	.0%	.2%	.0%
Andor	1.7	.4	1.3	31	.1%	.0%	.2%	.0%
ACDS Graphic System	1.7	.0	1.4	0	.1%	.0%	.2%	.0%

(Continued)

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Table 6 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Kork Systems	1.4	.2	.9	17	.1%	.0%	.1%	.0%
Softdesk	1.3	.0	1.3	0	.1%	.0%	.2%	.0%
Auto-Trol	1.3	.5	.5	16	.1%	.0%	.1%	.0%
Contract Data Research	1.3	.0	.4	0	.1%	.0%	.1%	.0%
Control Data Systems	1.2	.9	.0	36	.1%	.1%	.0%	.0%
LandCADD Int'l.	1.2	.0	1.1	0	.1%	.0%	.2%	.0%
Maptech	1.2	.0	1.2	0	.1%	.0%	.2%	.0%
PacSoft	1.1	.0	1.1	0	.1%	.0%	.2%	.0%
Other Companies	128.2	120.8	5.0	47,089	5.9%	10.9%	.7%	45.9%
All Companies	2,179.1	1,103.7	662.2	102,624	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	1,680.3	884.9	476.6	94,002	77.1%	80.2%	72.0%	91.6%
All Asian-Based Companies	208.3	123.6	64.4	4,083	9.6%	11.2%	9.7%	4.0%
All European-Based Companies	290.5	95.2	121.3	4,539	13.3%	8.6%	18.3%	4.4%
All Hardware Companies	713.7	624.4	1.4	84,120	32.8%	56.6%	.2%	82.0%
All Turnkey & SW Companies	1,465.4	479.3	660.8	18,504	67.2%	43.4%	99.8%	18.0%

Source: Dataquest (July 1994)

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Table 7
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	316.2	153.2	77.7	4,524	23.5%	23.0%	19.7%	18.4%
Siemens Nixdorf Info systeme	129.0	43.1	49.6	2,095	9.6%	6.5%	12.6%	8.5%
IBM	92.9	85.5	.0	2,819	6.9%	12.8%	.0%	11.4%
Sun Microsystems	67.9	53.6	.0	2,917	5.0%	8.0%	.0%	11.8%
Hewlett-Packard	66.8	56.7	.0	2,245	5.0%	8.5%	.0%	9.1%
Landmark Graphics	61.6	14.4	27.5	201	4.6%	2.2%	7.0%	.8%
GDS	59.9	27.6	26.4	1,082	4.4%	4.1%	6.7%	4.4%
ESRI	54.0	.0	41.6	0	4.0%	.0%	10.6%	.0%
Digital	41.5	32.1	.1	1,772	3.1%	4.8%	.0%	7.2%
Fujitsu	39.0	21.1	12.8	890	2.9%	3.2%	3.2%	3.6%
Mitsubishi Electric	37.8	32.1	2.7	354	2.8%	4.8%	.7%	1.4%
Data General	28.5	22.5	1.4	1,646	2.1%	3.4%	.4%	6.7%
ICL	26.0	15.2	9.0	749	1.9%	2.3%	2.3%	3.0%
Smallworld Systems	25.2	1.2	15.0	47	1.9%	.2%	3.8%	.2%
Sysdeco Ltd.	23.7	11.9	5.9	207	1.8%	1.8%	1.5%	.8%
Silicon Graphics	21.7	19.1	.0	716	1.6%	2.9%	.0%	2.9%
Uchida Yoko	20.3	12.0	7.3	508	1.5%	1.8%	1.9%	2.1%
Genasys II	19.3	1.9	13.5	45	1.4%	.3%	3.4%	.2%
Toshiba—No OEM	16.2	8.1	6.5	180	1.2%	1.2%	1.6%	.7%
Hitachi	14.4	6.8	6.2	285	1.1%	1.0%	1.6%	1.2%
Mitsui Engineering	13.5	9.3	2.8	93	1.0%	1.4%	.7%	.4%

(Continued)

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Table 7 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Laser-Scan	12.8	3.6	5.8	78	1.0%	.5%	1.5%	.3%
GeoVision Systems	11.4	.8	6.2	24	.8%	.1%	1.6%	.1%
Autometric	10.9	3.0	1.5	138	.8%	.4%	.4%	.6%
Straessle Informationssysteme	9.4	.7	6.5	75	.7%	.1%	1.7%	.3%
Synercom	8.3	.0	3.3	0	.6%	.0%	.8%	.0%
Unisys	8.2	1.9	3.3	78	.6%	.3%	.8%	.3%
INS Engineering	7.9	3.9	4.0	22	.6%	.6%	1.0%	.1%
NEC	7.3	4.5	2.1	204	.5%	.7%	.5%	.8%
ERDAS	7.2	1.7	5.0	43	.5%	.3%	1.3%	.2%
Kohns & Poppenhaeger	6.6	3.0	2.6	76	.5%	.4%	.7%	.3%
PCI Remote Sensing Corp	6.3	.0	6.3	0	.5%	.0%	1.6%	.0%
APIC Systemes	6.3	.0	4.2	0	.5%	.0%	1.1%	.0%
Star Informatic	6.0	1.2	3.8	82	.4%	.2%	1.0%	.3%
Dynamic Graphics	5.3	.0	3.4	0	.4%	.0%	.9%	.0%
Computervision	5.1	1.5	1.2	60	.4%	.2%	.3%	.2%
Clemessy Geocity	5.0	2.8	1.0	28	.4%	.4%	.3%	.1%
Sysscan	4.9	1.7	1.8	61	.4%	.2%	.4%	.2%
Century Research Center	4.7	2.5	1.8	33	.3%	.4%	.4%	.1%
Radian Corporation	4.4	.0	2.7	0	.3%	.0%	.7%	.0%
CADIX	4.2	1.8	2.0	23	.3%	.3%	.5%	.1%
Earth Resource Mapping	4.1	.0	3.7	0	.3%	.0%	.9%	.0%

(Continued)

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Table 7 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
PAFEC	2.7	.9	1.3	38	.2%	.1%	.3%	.2%
Autodesk	2.5	.0	2.5	0	.2%	.0%	.6%	.0%
Enghouse Systems Ltd.	2.2	.2	1.7	14	.2%	.0%	.4%	.1%
Intera Tydac	1.8	.0	1.8	0	.1%	.0%	.5%	.0%
Terr-Mar Resource Info Svs	1.8	.3	1.1	19	.1%	.0%	.3%	.1%
Geometria GIS Systems House	1.7	.1	.1	3	.1%	.0%	.0%	.0%
Mutoh Industries—No OEM	1.5	.6	.6	20	.1%	.1%	.1%	.1%
ACDS Graphic System	1.3	.0	1.1	0	.1%	.0%	.3%	.0%
Auto-Trol	1.3	.5	.5	16	.1%	.1%	.1%	.1%
Control Data Systems	1.2	.9	.0	36	.1%	.1%	.0%	.1%
ETAK	1.2	.0	1.1	1	.1%	.0%	.3%	.0%
Other Companies	6.4	1.6	3.9	88	.5%	.2%	1.0%	.4%
All Companies	1,347.1	667.1	393.8	24,639	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	917.9	478.0	236.8	18,442	68.1%	71.7%	60.1%	74.8%
All Asian-Based Companies	166.6	102.7	48.6	2,613	12.4%	15.4%	12.3%	10.6%
All European-Based Companies	262.6	86.4	108.4	3,584	19.5%	13.0%	27.5%	14.5%
All Hardware Companies	327.5	277.6	1.4	12,409	24.3%	41.6%	.4%	50.4%
All Turnkey & SW Companies	1,019.6	389.5	392.4	12,230	75.7%	58.4%	99.6%	49.6%

Source: Dataquest (July 1994)

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Table 8
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Host-Dependent
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Digital	27.9	21.6	.0	0	23.0%	30.1%	.0%	.0%
IBM	27.5	15.7	5.5	458	22.7%	21.9%	25.3%	24.8%
Fujitsu	18.7	8.6	7.5	282	15.5%	12.0%	34.2%	15.3%
Autometric	8.4	2.3	1.1	89	6.9%	3.2%	5.2%	4.8%
Siemens Nixdorf Info systeme	6.8	3.0	1.8	105	5.6%	4.2%	8.4%	5.7%
Mitsubishi Electric	6.4	3.0	1.8	18	5.3%	4.2%	8.2%	1.0%
Synercom	2.8	.0	1.1	0	2.3%	.0%	5.1%	.0%
GeoVision Systems	2.1	.2	1.1	2	1.7%	.2%	5.2%	.1%
Hitachi	1.1	.5	.5	271	.9%	.7%	2.2%	14.7%
Other Companies	19.5	16.9	1.4	622	16.1%	23.5%	6.2%	33.7%
All Companies	121.0	71.8	21.9	1,846	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	87.3	56.2	10.1	1,166	72.1%	78.3%	46.3%	63.2%
All Asian-Based Companies	26.2	12.1	9.8	571	21.7%	16.9%	44.6%	30.9%
All European-Based Companies	7.5	3.5	2.0	109	6.2%	4.8%	9.1%	5.9%
All Hardware Companies	44.9	37.9	.0	597	37.1%	52.8%	.0%	32.3%
All Turnkey & SW Companies	76.1	33.9	21.9	1,250	62.9%	47.2%	100.0%	67.7%

Source: Dataquest (July 1994)

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Table 9
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Server
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Sun Microsystems	99.5	82.6	.0	2,056	31.7%	49.9%	.0%	52.1%
ESRI	53.3	.0	41.1	0	17.0%	.0%	54.8%	.0%
Digital	50.9	39.5	.0	543	16.2%	23.9%	.0%	13.8%
Landmark Graphics	40.7	9.8	17.8	133	13.0%	5.9%	23.8%	3.4%
Intergraph	38.7	15.8	11.3	469	12.3%	9.6%	15.1%	11.9%
Data General	10.0	8.4	.0	540	3.2%	5.1%	.0%	13.7%
Sysscan	4.4	2.0	.9	34	1.4%	1.2%	1.2%	.9%
IBM	3.7	3.4	.0	73	1.2%	2.1%	.0%	1.8%
Unisys	2.8	.6	1.1	15	.9%	.4%	1.5%	.4%
Autometric	2.7	.7	.4	28	.9%	.4%	.5%	.7%
Strategic Mapping	2.2	.0	.7	0	.7%	.0%	1.0%	.0%
Hewlett-Packard	1.4	1.2	.0	26	.5%	.7%	.0%	.7%
Silicon Graphics	1.3	1.1	.0	16	.4%	.7%	.0%	.4%
Other Companies	2.3	.2	1.6	15	.7%	.1%	2.1%	.4%
All Companies	313.8	165.4	74.9	3,948	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	309.4	163.4	74.0	3,913	98.6%	98.8%	98.8%	99.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	4.4	2.0	.9	34	1.4%	1.2%	1.2%	.9%
All Hardware Companies	166.9	136.3	.0	3,264	53.2%	82.4%	.0%	82.7%
All Turnkey & SW Companies	146.9	29.1	74.9	684	46.8%	17.6%	100.0%	17.3%

Source: Dataquest (July 1994)

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Table 10
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Personal Computer
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	46.1	13.9	23.0	2,506	11.6%	6.9%	13.4%	3.5%
Autodesk	41.6	.0	41.6	0	10.5%	.0%	24.2%	.0%
IBM	30.6	30.6	.0	9,289	7.7%	15.3%	.0%	12.9%
ESRI	27.0	.0	25.7	0	6.8%	.0%	14.9%	.0%
MapInfo	19.5	.0	16.8	0	4.9%	.0%	9.8%	.0%
Apple Computer	18.6	18.6	.0	4,847	4.7%	9.3%	.0%	6.7%
Digital	12.7	12.1	.0	4,343	3.2%	6.1%	.0%	6.0%
Strategic Mapping	11.4	.0	8.6	0	2.9%	.0%	5.0%	.0%
Hewlett-Packard	10.1	9.1	.0	3,322	2.5%	4.5%	.0%	4.6%
ETAK	8.9	.4	8.5	15	2.2%	.2%	5.0%	.0%
Enghouse Systems Ltd.	6.6	.1	5.8	28	1.7%	.1%	3.4%	.0%
Mitsubishi Electric	4.9	3.2	1.7	405	1.2%	1.6%	1.0%	.6%
GeoGraphix	4.3	.0	3.2	0	1.1%	.0%	1.9%	.0%
Ground Modelling Systems	3.5	1.6	1.5	291	.9%	.8%	.9%	.4%
Tactics Int'l	3.5	.0	3.5	0	.9%	.0%	2.0%	.0%
Hitachi	3.3	1.6	1.4	170	.8%	.8%	.8%	.2%
PCI Remote Sensing Corp	2.7	.0	2.7	0	.7%	.0%	1.6%	.0%
ERDAS	2.4	.5	1.8	127	.6%	.2%	1.0%	.2%
Terra Sciences	2.3	.0	2.3	0	.6%	.0%	1.4%	.0%
Facility Mapping Systems	2.2	.0	2.0	0	.5%	.0%	1.2%	.0%
Uchida Yoko	2.2	1.3	.9	116	.5%	.6%	.5%	.2%
Genasys II	2.2	.2	1.5	50	.5%	.1%	.9%	.1%
Ziegler Informatics	2.0	.0	2.0	0	.5%	.0%	1.2%	.0%

(Continued)

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Table 10 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Personal Computer
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intera Tydac	2.0	.0	2.0	0	.5%	.0%	1.2%	.0%
Radian Corporation	2.0	.0	1.6	0	.5%	.0%	.9%	.0%
Generation 5 Technology	1.8	.0	.9	0	.5%	.0%	.5%	.0%
Andor	1.7	.4	1.3	31	.4%	.2%	.7%	.0%
RIB/Bausoftware	1.6	.2	1.2	20	.4%	.1%	.7%	.0%
Mutoh Industries—No OEM	1.3	1.0	.3	47	.3%	.5%	.2%	.1%
Kork Systems	1.3	.1	.9	7	.3%	.0%	.5%	.0%
Contract Data Research	1.3	.0	.4	0	.3%	.0%	.2%	.0%
Terr-Mar Resource Info Svs	1.3	.2	.8	27	.3%	.1%	.5%	.0%
Softdesk	1.2	.0	1.2	0	.3%	.0%	.7%	.0%
Mitsui Engineering	1.2	.8	.3	27	.3%	.4%	.1%	.0%
Maptech	1.2	.0	1.2	0	.3%	.0%	.7%	.0%
LandCADD Int'l.	1.1	.0	1.1	0	.3%	.0%	.6%	.0%
PacSoft	1.1	.0	1.1	0	.3%	.0%	.6%	.0%
Other Companies	108.7	103.7	3.1	46,524	27.4%	52.0%	1.8%	64.4%
All Companies	397.2	199.4	171.7	72,192	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	365.8	187.3	155.7	70,481	92.1%	93.9%	90.7%	97.6%
All Asian-Based Companies	15.5	8.9	6.0	899	3.9%	4.4%	3.5%	1.2%
All European-Based Companies	16.0	3.3	10.0	812	4.0%	1.7%	5.8%	1.1%
All Hardware Companies	174.3	172.6	.0	67,850	43.9%	86.6%	.0%	94.0%
All Turnkey & SW Companies	222.9	26.8	171.7	4,341	56.1%	13.4%	100.0%	6.0%

Source: Dataquest (July 1994)

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Table 11
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: All Platforms
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	203.4	92.6	56.9	4,081	21.8%	18.0%	22.7%	6.8%
Sun Microsystems	123.3	100.3	.0	3,842	13.2%	19.5%	.0%	6.4%
IBM	80.1	73.5	1.0	8,138	8.6%	14.3%	.4%	13.6%
Digital	69.6	57.2	.1	3,926	7.5%	11.1%	.0%	6.5%
ESRI	59.4	.0	47.9	0	6.4%	.0%	19.2%	.0%
Landmark Graphics	41.9	11.1	20.3	170	4.5%	2.2%	8.1%	.3%
Hewlett-Packard	39.7	34.1	.0	3,693	4.3%	6.6%	.0%	6.2%
Data General	36.6	29.4	1.4	2,077	3.9%	5.7%	.5%	3.5%
Autometric	22.0	6.0	3.0	255	2.4%	1.2%	1.2%	.4%
Silicon Graphics	21.2	18.6	.0	685	2.3%	3.6%	.0%	1.1%
Autodesk	20.7	.0	20.7	0	2.2%	.0%	8.3%	.0%
Apple Computer	16.8	16.8	.0	4,416	1.8%	3.3%	.0%	7.4%
MapInfo	16.1	.0	13.8	0	1.7%	.0%	5.5%	.0%
GDS	14.3	6.6	6.3	285	1.5%	1.3%	2.5%	.5%
Strategic Mapping	12.9	.0	8.8	0	1.4%	.0%	3.5%	.0%
PCI Remote Sensing Corp	9.0	.0	9.0	0	1.0%	.0%	3.6%	.0%
ETAK	8.5	.3	8.2	17	.9%	.1%	3.3%	.0%
Synercom	6.8	.0	2.8	0	.7%	.0%	1.1%	.0%
ERDAS	5.9	1.4	4.1	104	.6%	.3%	1.6%	.2%
GeoVision Systems	5.5	.4	3.0	11	.6%	.1%	1.2%	.0%

(Continued)

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Table 11 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: All Platforms
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Enghouse Systems Ltd.	5.5	.3	4.6	26	.6%	.1%	1.8%	.0%
Genasys II	5.2	.5	3.6	24	.6%	.1%	1.4%	.0%
GeoGraphix	4.0	.0	3.0	0	.4%	.0%	1.2%	.0%
Intera Tydac	3.8	.0	3.8	0	.4%	.0%	1.5%	.0%
Radian Corporation	3.5	.0	2.4	0	.4%	.0%	.9%	.0%
Tactics Int'l	3.5	.0	3.5	0	.4%	.0%	1.4%	.0%
Dynamic Graphics	3.4	.0	2.2	0	.4%	.0%	.9%	.0%
Computervision	3.2	1.1	.6	36	.3%	.2%	.2%	.1%
Laser-Scan	2.7	.8	1.2	17	.3%	.2%	.5%	.0%
Terra Sciences	2.2	.0	2.2	0	.2%	.0%	.9%	.0%
Smallworld Systems	2.0	.1	1.2	4	.2%	.0%	.5%	.0%
Facility Mapping Systems	2.0	.0	1.8	0	.2%	.0%	.7%	.0%
Earth Resource Mapping	1.8	.0	1.7	0	.2%	.0%	.7%	.0%
Terr-Mar Resource Info Svs	1.7	.3	1.1	26	.2%	.1%	.4%	.0%
Unisys	1.7	.4	.7	17	.2%	.1%	.3%	.0%
Generation 5 Technology	1.5	.0	.8	0	.2%	.0%	.3%	.0%
Auto-Trol	1.3	.5	.5	16	.1%	.1%	.2%	.0%
ACDS Graphic System	1.3	.0	1.1	0	.1%	.0%	.4%	.0%
Softdesk	1.2	.0	1.2	0	.1%	.0%	.5%	.0%
Maptech	1.2	.0	1.2	0	.1%	.0%	.5%	.0%

(Continued)

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Table 11 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: All Platforms
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
PacSoft	1.1	.0	1.1	0	.1%	.0%	.4%	.0%
Other Companies	66.1	61.7	3.5	28,128	7.1%	12.0%	1.4%	46.9%
All Companies	933.5	513.8	250.0	59,993	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	**924.7**	**512.6**	**243.9**	59,920	**99.1%**	**99.8%**	**97.6%**	**99.9%**
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	8.8	1.2	6.1	73	.9%	.2%	2.4%	.1%
All Hardware Companies	**442.9**	**387.5**	**1.4**	**54,480**	**47.4%**	**75.4%**	**.5%**	**90.8%**
All Turnkey & SW Companies	**490.6**	**126.3**	**248.6**	5,513	**52.6%**	**24.6%**	**99.5%**	9.2%

Source: Dataquest (July 1994)

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Table 12
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Technical Workstation
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	159.6	77.5	39.1	2,453	32.5%	28.5%	34.5%	21.1%
IBM	54.1	49.7	.0	1,743	11.0%	18.3%	.0%	15.0%
Sun Microsystems	50.2	39.7	.0	2,262	10.2%	14.6%	.0%	19.4%
Hewlett-Packard	30.9	26.3	.0	1,155	6.3%	9.7%	.0%	9.9%
Data General	27.1	21.4	1.4	1,564	5.5%	7.9%	1.2%	13.4%
Landmark Graphics	25.3	6.6	12.3	103	5.1%	2.4%	10.9%	.9%
ESRI	23.8	.0	18.3	0	4.8%	.0%	16.2%	.0%
Digital	21.8	17.5	.1	1,070	4.4%	6.5%	.1%	9.2%
Silicon Graphics	20.2	17.7	.0	672	4.1%	6.5%	.0%	5.8%
GDS	14.3	6.6	6.3	285	2.9%	2.4%	5.6%	2.4%
Autometric	10.9	3.0	1.5	138	2.2%	1.1%	1.3%	1.2%
PCI Remote Sensing Corp	6.3	.0	6.3	0	1.3%	.0%	5.6%	.0%
Synercom	5.1	.0	2.1	0	1.0%	.0%	1.8%	.0%
GeoVision Systems	4.7	.3	2.5	10	1.0%	.1%	2.2%	.1%
Genasys II	4.6	.5	3.3	11	.9%	.2%	2.9%	.1%
ERDAS	4.4	1.1	3.0	26	.9%	.4%	2.7%	.2%
Dynamic Graphics	3.2	.0	2.0	0	.6%	.0%	1.8%	.0%
Computervision	2.8	1.0	.6	33	.6%	.3%	.5%	.3%
Laser-Scan	2.6	.7	1.2	16	.5%	.3%	1.0%	.1%
Radian Corporation	2.2	.0	1.3	0	.4%	.0%	1.2%	.0%
Smallworld Systems	2.0	.1	1.2	4	.4%	.0%	1.1%	.0%

(Continued)

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Table 12 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Technical Workstation
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intera Tydac	1.8	.0	1.8	0	.4%	.0%	1.6%	.0%
Earth Resource Mapping	1.8	.0	1.7	0	.4%	.0%	1.5%	.0%
Enghouse Systems Ltd.	1.4	.2	1.0	9	.3%	.1%	.9%	.1%
Auto-Trol	1.3	.5	.5	16	.3%	.2%	.5%	.1%
Unisys	1.2	.3	.5	12	.2%	.1%	.4%	.1%
Autodesk	1.0	.0	1.0	0	.2%	.0%	.9%	.0%
Terr-Mar Resource Info Svs	1.0	.2	.6	11	.2%	.1%	.6%	.1%
ACDS Graphic System	1.0	.0	.9	0	.2%	.0%	.8%	.0%
Other Companies	4.0	.9	2.8	51	.8%	.3%	2.5%	.4%
All Companies	490.6	271.5	113.2	11,643	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	486.0	270.7	110.9	11,624	99.1%	99.7%	97.9%	99.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	4.6	.8	2.4	19	.9%	.3%	2.1%	.2%
All Hardware Companies	204.5	172.7	1.4	8,479	41.7%	63.6%	1.2%	72.8%
All Turnkey & SW Companies	286.2	98.9	111.9	3,164	58.3%	36.4%	98.8%	27.2%

Source: Dataquest (July 1994)

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Table 13
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Host-Dependent
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Digital	14.6	11.8	.0	0	41.4%	57.1%	.2%	.0%
Autometric	8.4	2.3	1.1	89	23.8%	11.1%	28.4%	27.1%
IBM	5.1	2.9	1.0	98	14.4%	14.0%	25.1%	29.8%
Synercom	1.7	.0	.7	0	4.9%	.0%	17.2%	.0%
Other Companies	5.5	3.7	1.2	142	15.7%	17.8%	29.1%	43.1%
All Companies	35.2	20.6	4.0	329	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	35.1	20.6	4.0	328	99.6%	99.6%	99.3%	99.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.1	.1	.0	1	.4%	.4%	.7%	.3%
All Hardware Companies	18.2	15.3	.0	127	51.7%	73.9%	.0%	38.7%
All Turnkey & SW Companies	17.0	5.4	4.0	201	48.3%	26.1%	100.0%	61.3%

Source: Dataquest (July 1994)

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Table 14
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Server
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Sun Microsystems	73.1	60.7	.0	1,580	40.3%	56.2%	.0%	54.9%
Digital	26.6	21.6	.0	327	14.7%	20.0%	.0%	11.3%
ESRI	23.5	.0	18.1	0	12.9%	.0%	52.3%	.0%
Intergraph	20.3	8.1	6.1	264	11.2%	7.5%	17.7%	9.2%
Landmark Graphics	16.7	4.5	8.0	68	9.2%	4.2%	23.2%	2.3%
Data General	9.5	8.0	.0	513	5.2%	7.4%	.0%	17.8%
Autometric	2.7	.7	.4	28	1.5%	.7%	1.1%	1.0%
IBM	2.3	2.1	.0	47	1.2%	1.9%	.0%	1.6%
Strategic Mapping	2.0	.0	.7	0	1.1%	.0%	2.0%	.0%
Hewlett-Packard	1.4	1.2	.0	25	.8%	1.1%	.0%	.9%
Silicon Graphics	1.1	.9	.0	13	.6%	.8%	.0%	.4%
Other Companies	2.1	.3	1.3	13	1.1%	.3%	3.8%	.5%
All Companies	181.2	108.0	34.5	2,878	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	181.2	108.0	34.5	2,878	100.0%	100.0%	100.0%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	114.0	94.4	.0	2,512	62.9%	87.4%	.0%	87.3%
All Turnkey & SW Companies	67.2	13.6	34.5	366	37.1%	12.6%	100.0%	12.7%

Source: Dataquest (July 1994)

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Table 15
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Personal Computer
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	23.4	7.0	11.7	1,365	10.3%	6.2%	11.9%	3.0%
Autodesk	19.7	.0	19.7	0	8.7%	.0%	20.0%	.0%
IBM	18.8	18.8	.0	6,250	8.3%	16.5%	.0%	13.8%
Apple Computer	16.8	16.8	.0	4,416	7.4%	14.8%	.0%	9.8%
MapInfo	15.6	.0	13.4	0	6.9%	.0%	13.7%	.0%
ESRI	11.9	.0	11.3	0	5.2%	.0%	11.5%	.0%
Strategic Mapping	10.9	.0	8.2	0	4.8%	.0%	8.3%	.0%
Hewlett-Packard	7.4	6.6	.0	2,513	3.2%	5.8%	.0%	5.6%
Digital	6.7	6.3	.0	2,529	3.0%	5.6%	.0%	5.6%
ETAK	6.7	.3	6.4	12	2.9%	.2%	6.5%	.0%
Enghouse Systems Ltd.	4.1	.1	3.6	17	1.8%	.1%	3.6%	.0%
GeoGraphix	4.0	.0	3.0	0	1.8%	.0%	3.0%	.0%
Tactics Int'l	3.5	.0	3.5	0	1.5%	.0%	3.5%	.0%
PCI Remote Sensing Corp	2.7	.0	2.7	0	1.2%	.0%	2.7%	.0%
Intera Tydac	2.0	.0	2.0	0	.9%	.0%	2.0%	.0%
Facility Mapping Systems	1.9	.0	1.7	0	.8%	.0%	1.7%	.0%
Terra Sciences	1.8	.0	1.8	0	.8%	.0%	1.9%	.0%
ERDAS	1.5	.3	1.1	77	.6%	.3%	1.1%	.2%
Generation 5 Technology	1.5	.0	.8	0	.6%	.0%	.8%	.0%
Maptech	1.2	.0	1.2	0	.5%	.0%	1.2%	.0%
Softdesk	1.2	.0	1.1	0	.5%	.0%	1.2%	.0%

(Continued)

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Table 15 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Personal Computer
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
PacSoft	1.1	.0	1.1	0	.5%	.0%	1.1%	.0%
Other Companies	62.6	57.4	4.2	27,966	27.6%	50.6%	4.3%	61.9%
All Companies	226.4	113.6	98.2	45,144	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	222.4	113.3	94.5	45,091	98.2%	99.8%	96.3%	99.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	4.0	.3	3.7	52	1.8%	.2%	3.7%	.1%
All Hardware Companies	106.3	105.2	.0	43,362	46.9%	92.6%	.0%	96.1%
All Turnkey & SW Companies	120.2	8.4	98.2	1,782	53.1%	7.4%	100.0%	3.9%

Source: Dataquest (July 1994)

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Table 16
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: All Platforms
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	137.5	58.2	43.0	2,198	18.2%	17.1%	17.5%	8.7%
Siemens Nixdorf Info systeme	126.5	42.9	48.2	2,055	16.7%	12.6%	19.6%	8.1%
IBM	55.7	46.6	3.0	2,874	7.4%	13.7%	1.2%	11.3%
Digital	50.1	37.2	.0	2,176	6.6%	10.9%	.0%	8.6%
ESRI	44.6	.0	36.0	0	5.9%	.0%	14.6%	.0%
Sun Microsystems	39.0	31.8	.0	1,010	5.2%	9.3%	.0%	4.0%
Landmark Graphics	37.1	7.8	14.9	95	4.9%	2.3%	6.1%	.4%
Hewlett-Packard	30.0	25.6	.0	1,412	4.0%	7.5%	.0%	5.6%
ICL	26.0	15.2	9.0	749	3.4%	4.5%	3.7%	2.9%
Sysdeco Ltd.	23.7	11.9	5.9	207	3.1%	3.5%	2.4%	.8%
Smallworld Systems	23.2	1.1	13.8	43	3.1%	.3%	5.6%	.2%
Autodesk	14.5	.0	14.5	0	1.9%	.0%	5.9%	.0%
Laser-Scan	9.5	2.8	4.2	58	1.3%	.8%	1.7%	.2%
Straessle Informationssysteme	9.4	.7	6.5	75	1.2%	.2%	2.7%	.3%
Unisys	8.6	1.9	3.5	84	1.1%	.6%	1.4%	.3%
Sysscan	8.5	3.4	2.5	88	1.1%	1.0%	1.0%	.3%
Kohns & Poppenhaeger	6.6	3.0	2.6	76	.9%	.9%	1.1%	.3%
Genasys II	6.2	.6	4.4	26	.8%	.2%	1.8%	.1%
Star Informatic	6.0	1.2	3.8	81	.8%	.4%	1.6%	.3%
APIC Systemes	5.9	.0	4.0	0	.8%	.0%	1.6%	.0%
GDS	4.9	2.2	2.1	78	.6%	.7%	.9%	.3%
Clemessy Geocity	4.5	2.5	.9	25	.6%	.7%	.4%	.1%
GeoVision Systems	3.3	.2	1.8	6	.4%	.1%	.7%	.0%

(Continued)

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Table 16 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: All Platforms
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Ground Modelling Systems	2.9	1.3	1.3	239	.4%	.4%	.5%	.9%
PAFEC	2.7	.9	1.3	38	.4%	.3%	.5%	.2%
Geometria GIS Systems House	2.6	.2	.1	14	.3%	.1%	.0%	.1%
Synercom	2.2	.0	.9	0	.3%	.0%	.4%	.0%
ERDAS	2.2	.5	1.5	39	.3%	.2%	.6%	.2%
Computervision	2.2	.5	.6	26	.3%	.2%	.3%	.1%
MapInfo	2.1	.0	1.8	0	.3%	.0%	.7%	.0%
RIB/Bausoftware	2.0	.2	1.6	22	.3%	.1%	.6%	.1%
Ziegler Informatics	2.0	.0	2.0	0	.3%	.0%	.8%	.0%
Enghouse Systems Ltd.	1.9	.1	1.7	9	.3%	.0%	.7%	.0%
Silicon Graphics	1.9	1.6	.0	47	.2%	.5%	.0%	.2%
ETAK	1.7	.1	1.6	3	.2%	.0%	.7%	.0%
Dynamic Graphics	1.4	.0	.9	0	.2%	.0%	.4%	.0%
Contract Data Research	1.2	.0	.3	0	.2%	.0%	.1%	.0%
Other Companies	45.5	37.7	5.6	11,542	6.0%	11.1%	2.3%	45.4%
All Companies	755.8	339.9	246.0	25,397	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	486.4	250.0	135.2	21,094	64.4%	73.6%	55.0%	83.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	269.4	89.8	110.7	4,303	35.6%	26.4%	45.0%	16.9%
All Hardware Companies	198.4	170.2	.0	18,656	26.3%	50.1%	.0%	73.5%
All Turnkey & SW Companies	557.4	169.6	246.0	6,741	73.7%	49.9%	100.0%	26.5%

Source: Dataquest (July 1994)

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Table 17
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Technical Workstation
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Siemens Nixdorf Info systeme	120.2	40.1	46.5	1,958	23.1%	18.2%	27.1%	24.7%
Intergraph	109.3	48.4	31.4	1,288	21.0%	22.0%	18.3%	16.2%
IBM	33.4	30.7	.0	898	6.4%	13.9%	.0%	11.3%
Hewlett-Packard	28.1	23.9	.0	878	5.4%	10.8%	.0%	11.1%
ICL	26.0	15.2	9.0	749	5.0%	6.9%	5.3%	9.4%
Sysdeco Ltd.	23.7	11.9	5.9	207	4.6%	5.4%	3.5%	2.6%
Smallworld Systems	23.2	1.1	13.8	43	4.5%	.5%	8.0%	.5%
Landmark Graphics	22.4	4.6	9.0	57	4.3%	2.1%	5.3%	.7%
ESRI	17.8	.0	13.7	0	3.4%	.0%	8.0%	.0%
Sun Microsystems	15.9	12.6	.0	595	3.1%	5.7%	.0%	7.5%
Digital	15.6	11.2	.0	549	3.0%	5.1%	.0%	6.9%
Straessle Informationssysteme	9.4	.7	6.5	75	1.8%	.3%	3.8%	1.0%
Laser-Scan	9.0	2.5	4.1	55	1.7%	1.1%	2.4%	.7%
Kohns & Poppenhaeger	6.6	3.0	2.6	76	1.3%	1.4%	1.5%	1.0%
Unisys	6.1	1.4	2.5	58	1.2%	.6%	1.5%	.7%
Star Informatic	6.0	1.2	3.8	81	1.2%	.5%	2.2%	1.0%
APIC Systemes	5.9	.0	4.0	0	1.1%	.0%	2.3%	.0%
Genasys II	5.6	.6	3.9	12	1.1%	.3%	2.3%	.2%
GDS	4.9	2.2	2.1	78	.9%	1.0%	1.2%	1.0%
Sysscan	4.5	1.5	1.6	56	.9%	.7%	.9%	.7%
Clemessy Geocity	4.5	2.5	.9	25	.9%	1.1%	.5%	.3%

(Continued)

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Table 17 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Technical Workstation
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
GeoVision Systems	2.8	.2	1.5	6	.5%	.1%	.9%	.1%
PAFEC	2.7	.9	1.3	38	.5%	.4%	.8%	.5%
Computervision	2.2	.5	.6	26	.4%	.2%	.4%	.3%
Geometria GIS Systems House	1.7	.1	.1	3	.3%	.0%	.1%	.0%
ERDAS	1.7	.4	1.1	10	.3%	.2%	.7%	.1%
Synercom	1.7	.0	.7	0	.3%	.0%	.4%	.0%
Silicon Graphics	1.6	1.4	.0	44	.3%	.6%	.0%	.6%
Dynamic Graphics	1.3	.0	.9	0	.3%	.0%	.5%	.0%
Other Companies	6.7	1.7	4.0	75	1.3%	.8%	2.3%	.9%
All Companies	520.5	220.6	171.7	7,941	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	273.8	138.8	69.9	4,530	52.6%	62.9%	40.7%	57.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	246.7	81.8	101.8	3,411	47.4%	37.1%	59.3%	43.0%
All Hardware Companies	95.4	80.3	.0	2,988	18.3%	36.4%	.0%	37.6%
All Turnkey & SW Companies	425.1	140.3	171.7	4,953	81.7%	63.6%	100.0%	62.4%

Source: Dataquest (July 1994)

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Table 18
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Host-Dependent
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
IBM	15.0	8.7	3.0	258	36.8%	33.2%	53.6%	42.5%
Digital	10.5	7.6	.0	0	25.8%	29.0%	.0%	.0%
Siemens Nixdorf Info systeme	6.3	2.8	1.7	98	15.5%	10.8%	30.6%	16.1%
Other Companies	9.0	7.1	.9	251	22.0%	27.0%	15.8%	41.4%
All Companies	40.8	26.1	5.7	607	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	33.9	23.0	3.8	506	83.2%	87.9%	67.6%	83.4%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	6.9	3.2	1.8	101	16.8%	12.1%	32.4%	16.6%
All Hardware Companies	17.5	14.2	.0	244	42.9%	54.5%	.0%	40.3%
All Turnkey & SW Companies	23.3	11.9	5.7	363	57.1%	45.5%	100.0%	59.7%

Source: Dataquest (July 1994)

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Table 19
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Server
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Sun Microsystems	23.1	19.2	.0	416	24.4%	42.8%	.0%	50.3%
Digital	19.2	13.8	.0	167	20.2%	30.8%	.0%	20.3%
ESRI	17.6	.0	13.6	0	18.5%	.0%	54.1%	.0%
Landmark Graphics	14.8	3.1	5.9	38	15.5%	7.0%	23.4%	4.6%
Intergraph	12.4	5.0	3.7	135	13.0%	11.0%	14.9%	16.3%
Sysscan	4.0	1.9	.8	32	4.2%	4.1%	3.4%	3.8%
Unisys	2.1	.5	.9	11	2.2%	1.0%	3.4%	1.4%
IBM	1.2	1.1	.0	21	1.3%	2.5%	.0%	2.6%
Other Companies	.6	.3	.2	7	.6%	.6%	.8%	.8%
All Companies	95.0	44.8	25.0	826	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	90.9	43.0	24.2	795	95.8%	95.9%	96.6%	96.2%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	4.0	1.9	.8	32	4.2%	4.1%	3.4%	3.8%
All Hardware Companies	43.9	34.4	.0	611	46.2%	76.8%	.0%	73.9%
All Turnkey & SW Companies	51.1	10.4	25.0	216	53.8%	23.2%	100.0%	26.1%

Source: Dataquest (July 1994)

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Table 20
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Personal Computer
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	15.8	4.8	7.9	775	15.9%	9.8%	18.1%	4.8%
Autodesk	13.8	.0	13.8	0	13.9%	.0%	31.7%	.0%
ESRI	8.9	.0	8.5	0	9.0%	.0%	19.5%	.0%
IBM	6.1	6.1	.0	1,697	6.1%	12.6%	.0%	10.6%
Digital	4.8	4.6	.0	1,459	4.8%	9.4%	.0%	9.1%
Ground Modelling Systems	2.9	1.3	1.3	239	2.9%	2.7%	3.0%	1.5%
MapInfo	2.0	.0	1.8	0	2.0%	.0%	4.0%	.0%
Ziegler Informatics	2.0	.0	2.0	0	2.0%	.0%	4.6%	.0%
Hewlett-Packard	1.9	1.7	.0	534	1.9%	3.5%	.0%	3.3%
RIB/Bausoftware	1.6	.2	1.2	20	1.6%	.5%	2.8%	.1%
Enghouse Systems Ltd.	1.5	.0	1.3	6	1.5%	.0%	2.9%	.0%
ETAK	1.3	.1	1.3	2	1.3%	.1%	2.9%	.0%
Contract Data Research	1.2	.0	.3	0	1.2%	.0%	.8%	.0%
Other Companies	35.9	29.7	4.2	11,290	36.0%	61.3%	9.7%	70.5%
All Companies	99.6	48.3	43.6	16,022	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	87.8	45.3	37.3	15,263	88.1%	93.7%	85.7%	95.3%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	11.8	3.0	6.3	759	11.9%	6.3%	14.3%	4.7%
All Hardware Companies	41.7	41.3	.0	14,812	41.8%	85.4%	.0%	92.4%
All Turnkey & SW Companies	57.9	7.1	43.6	1,210	58.2%	14.6%	100.0%	7.6%

Source: Dataquest (July 1994)

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Table 21
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: All Platforms
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Fujitsu	57.7	29.7	20.2	1,172	16.5%	15.7%	18.0%	11.7%
Mitsubishi Electric	49.1	38.4	6.1	777	14.1%	20.2%	5.4%	7.8%
Uchida Yoko	22.5	13.3	8.2	624	6.4%	7.0%	7.3%	6.2%
Intergraph	20.0	10.7	4.0	323	5.7%	5.6%	3.6%	3.2%
Hitachi	18.9	8.9	8.1	726	5.4%	4.7%	7.2%	7.3%
Landmark Graphics	16.6	3.8	7.1	47	4.7%	2.0%	6.3%	.5%
Toshiba—No OEM	16.2	8.1	6.5	180	4.6%	4.3%	5.7%	1.8%
Mitsui Engineering	14.7	10.2	3.0	120	4.2%	5.4%	2.7%	1.2%
GDS	14.2	6.5	6.2	189	4.1%	3.4%	5.5%	1.9%
ESRI	13.5	.0	10.9	0	3.9%	.0%	9.7%	.0%
Digital	10.6	8.8	.0	406	3.0%	4.6%	.0%	4.1%
IBM	10.1	7.4	1.3	788	2.9%	3.9%	1.1%	7.9%
NEC	8.1	5.1	2.3	308	2.3%	2.7%	2.0%	3.1%
Siemens Nixdorf Info systeme	7.9	2.5	3.1	121	2.3%	1.3%	2.8%	1.2%
INS Engineering	7.9	3.9	4.0	22	2.3%	2.0%	3.6%	.2%
Hewlett-Packard	7.5	6.4	.0	257	2.2%	3.4%	.0%	2.6%
Autodesk	7.0	.0	7.0	0	2.0%	.0%	6.3%	.0%
Century Research Center	4.7	2.5	1.8	33	1.3%	1.3%	1.6%	.3%
CADIX	4.2	1.8	2.0	23	1.2%	.9%	1.8%	.2%
Sun Microsystems	3.8	3.1	.0	92	1.1%	1.6%	.0%	.9%
GeoVision Systems	3.5	.3	1.9	7	1.0%	.1%	1.7%	.1%

(Continued)

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Table 21 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: All Platforms
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Mutoh Industries—No OEM	2.8	1.6	.9	67	.8%	.9%	.8%	.7%
Genasys II	1.9	.2	1.4	9	.6%	.1%	1.2%	.1%
Synercom	1.9	.0	.8	0	.5%	.0%	.7%	.0%
Andor	1.7	.4	1.3	31	.5%	.2%	1.1%	.3%
Earth Resource Mapping	1.2	.0	1.1	0	.3%	.0%	1.0%	.0%
Other Companies	21.2	16.3	3.5	3,667	6.1%	8.6%	3.1%	36.7%
All Companies	349.3	189.5	112.6	9,989	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	131.7	62.9	44.7	5,773	37.7%	33.2%	39.7%	57.8%
All Asian-Based Companies	208.3	123.6	64.4	4,083	59.6%	65.2%	57.2%	40.9%
All European-Based Companies	9.2	3.0	3.6	132	2.6%	1.6%	3.2%	1.3%
All Hardware Companies	48.5	44.5	.0	5,339	13.9%	23.5%	.0%	53.4%
All Turnkey & SW Companies	300.7	145.0	112.6	4,650	86.1%	76.5%	100.0%	46.6%

Source: Dataquest (July 1994)

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Table 22
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Technical Workstation
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Fujitsu	39.0	21.1	12.8	890	16.1%	15.7%	16.9%	25.1%
Mitsubishi Electric	37.8	32.1	2.7	354	15.6%	24.0%	3.5%	10.0%
Uchida Yoko	20.3	12.0	7.3	508	8.4%	8.9%	9.7%	14.3%
Toshiba—No OEM	16.2	8.1	6.5	180	6.7%	6.0%	8.6%	5.1%
Intergraph	15.7	9.1	2.4	207	6.5%	6.8%	3.2%	5.8%
Hitachi	14.4	6.8	6.2	285	5.9%	5.0%	8.2%	8.0%
GDS	14.2	6.5	6.2	189	5.8%	4.9%	8.2%	5.3%
Mitsui Engineering	13.5	9.3	2.8	93	5.5%	6.9%	3.7%	2.6%
Landmark Graphics	10.0	2.3	4.3	28	4.1%	1.7%	5.7%	.8%
INS Engineering	7.9	3.9	4.0	22	3.2%	2.9%	5.3%	.6%
Siemens Nixdorf Info systeme	7.5	2.4	3.0	115	3.1%	1.8%	4.0%	3.2%
Hewlett-Packard	7.3	6.2	.0	196	3.0%	4.6%	.0%	5.5%
NEC	7.3	4.5	2.1	204	3.0%	3.4%	2.8%	5.8%
ESRI	5.4	.0	4.2	0	2.2%	.0%	5.5%	.0%
Century Research Center	4.7	2.5	1.8	33	1.9%	1.8%	2.3%	.9%
CADIX	4.2	1.8	2.0	23	1.7%	1.3%	2.7%	.6%
Digital	3.3	2.7	.0	112	1.4%	2.0%	.0%	3.1%
GeoVision Systems	2.9	.2	1.6	6	1.2%	.2%	2.1%	.2%
Genasys II	1.7	.2	1.2	4	.7%	.1%	1.6%	.1%
Sun Microsystems	1.6	1.3	.0	56	.7%	1.0%	.0%	1.6%
Mutoh Industries—No OEM	1.5	.6	.6	20	.6%	.5%	.7%	.6%

(Continued)

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Table 22 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Technical Workstation
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Synercom	1.4	.0	.6	0	.6%	.0%	.8%	.0%
Earth Resource Mapping	1.2	.0	1.1	0	.5%	.0%	1.5%	.0%
Other Companies	3.7	.7	2.3	24	1.5%	.5%	3.1%	.7%
All Companies	242.6	134.1	75.6	3,550	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	67.6	28.8	23.6	814	27.9%	21.5%	31.2%	22.9%
All Asian-Based Companies	166.6	102.7	48.6	2,613	68.7%	76.6%	64.3%	73.6%
All European-Based Companies	8.4	2.7	3.4	123	3.5%	2.0%	4.5%	3.5%
All Hardware Companies	19.4	17.3	.0	622	8.0%	12.9%	.0%	17.5%
All Turnkey & SW Companies	223.2	116.8	75.6	2,928	92.0%	87.1%	100.0%	82.5%

Source: Dataquest (July 1994)

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Table 23
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Host-Dependent
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Fujitsu	18.7	8.6	7.5	282	43.9%	36.2%	64.0%	32.1%
Mitsubishi Electric	6.4	3.0	1.8	18	15.0%	12.6%	15.3%	2.0%
IBM	6.3	3.6	1.3	81	14.8%	15.1%	10.8%	9.2%
Digital	2.2	1.8	.0	0	5.2%	7.6%	.0%	.0%
Hitachi	1.1	.5	.5	271	2.6%	2.2%	4.1%	30.8%
Other Companies	7.9	6.3	.7	228	18.5%	26.3%	5.8%	25.9%
All Companies	42.6	23.8	11.7	879	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	16.0	11.5	1.8	303	37.5%	48.2%	15.7%	34.4%
All Asian-Based Companies	26.2	12.1	9.8	571	61.5%	51.0%	83.3%	64.9%
All European-Based Companies	.4	.2	.1	6	1.0%	.8%	.9%	.7%
All Hardware Companies	8.6	7.8	.0	221	20.1%	33.0%	.0%	25.1%
All Turnkey & SW Companies	34.1	15.9	11.7	659	79.9%	67.0%	100.0%	74.9%

Source: Dataquest (July 1994)

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Table 24
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Server
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Landmark Graphics	6.6	1.5	2.8	19	31.9%	19.9%	37.1%	16.4%
ESRI	5.3	.0	4.1	0	25.7%	.0%	54.4%	.0%
Digital	4.1	3.3	.0	37	19.6%	42.6%	.0%	32.3%
Sun Microsystems	2.2	1.8	.0	36	10.5%	23.5%	.0%	31.9%
Intergraph	2.0	.9	.5	19	9.7%	11.8%	6.4%	16.5%
Other Companies	.5	.2	.2	3	2.5%	2.2%	2.1%	2.9%
All Companies	20.7	7.7	7.5	113	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	20.3	7.6	7.5	111	98.3%	97.9%	99.1%	97.5%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.4	.2	.1	3	1.7%	2.1%	.9%	2.5%
All Hardware Companies	6.2	5.1	.0	73	30.2%	66.1%	.0%	64.2%
All Turnkey & SW Companies	14.4	2.6	7.5	41	69.8%	33.9%	100.0%	35.8%

Source: Dataquest (July 1994)

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Table 25
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Personal Computer
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Autodesk	6.4	.0	6.4	0	14.9%	.0%	36.2%	.0%
Mitsubishi Electric	4.9	3.2	1.7	405	11.3%	13.5%	9.4%	7.4%
IBM	3.8	3.8	.0	707	8.8%	15.9%	.0%	13.0%
Hitachi	3.3	1.6	1.4	170	7.7%	6.5%	8.0%	3.1%
ESRI	2.7	.0	2.6	0	6.2%	.0%	14.4%	.0%
Intergraph	2.3	.7	1.1	97	5.3%	2.9%	6.4%	1.8%
Uchida Yoko	2.2	1.3	.9	116	5.0%	5.3%	5.0%	2.1%
Andor	1.7	.4	1.3	31	3.9%	1.5%	7.0%	.6%
Mutoh Industries—No OEM	1.3	1.0	.3	47	3.1%	4.1%	1.9%	.9%
Mitsui Engineering	1.2	.8	.3	27	2.8%	3.5%	1.4%	.5%
Digital	1.0	1.0	.0	258	2.3%	4.1%	.0%	4.7%
Other Companies	12.4	10.2	1.8	3,589	28.6%	42.5%	10.1%	65.9%
All Companies	43.3	24.0	17.8	5,445	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	27.8	15.1	11.8	4,546	64.2%	63.0%	66.2%	83.5%
All Asian-Based Companies	15.5	8.9	6.0	899	35.7%	37.0%	33.7%	16.5%
All European-Based Companies	.1	.0	.0	0	.1%	.0%	.1%	.0%
All Hardware Companies	14.3	14.3	.0	4,423	33.1%	59.5%	.0%	81.2%
All Turnkey & SW Companies	29.0	9.7	17.8	1,022	66.9%	40.5%	100.0%	18.8%

Source: Dataquest (July 1994)

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Table 26
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: All Platforms
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	40.1	21.4	8.1	897	28.5%	35.3%	15.1%	12.4%
GDS	26.6	12.2	11.7	531	18.9%	20.2%	21.8%	7.3%
ESRI	17.6	.0	14.1	0	12.5%	.0%	26.3%	.0%
IBM	8.7	7.8	.2	839	6.2%	12.9%	.4%	11.6%
Genasys II	8.2	.8	5.7	37	5.8%	1.4%	10.7%	.5%
Landmark Graphics	6.6	1.5	2.9	22	4.7%	2.4%	5.4%	.3%
Radian Corporation	3.5	.0	2.4	0	2.5%	.0%	4.4%	.0%
Digital	2.7	2.2	.0	150	1.9%	3.6%	.0%	2.1%
Data General	1.9	1.5	.1	109	1.4%	2.5%	.1%	1.5%
Autodesk	1.8	.0	1.8	0	1.3%	.0%	3.3%	.0%
MapInfo	1.6	.0	1.4	0	1.1%	.0%	2.5%	.0%
Siemens Nixdorf Info systeme	1.4	.7	.1	24	1.0%	1.1%	.3%	.3%
GeoVision Systems	1.3	.1	.7	2	.9%	.1%	1.3%	.0%
Enghouse Systems Ltd.	1.2	.1	1.1	6	.9%	.1%	2.0%	.1%
Sun Microsystems	1.2	1.0	.0	27	.8%	1.6%	.0%	.4%
Hewlett-Packard	1.1	.9	.0	230	.8%	1.5%	.0%	3.2%
Other Companies	15.2	10.4	3.5	4,371	10.8%	17.1%	6.5%	60.3%
All Companies	140.6	60.5	53.7	7,246	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	137.5	59.3	52.8	7,214	97.8%	98.0%	98.4%	99.6%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	3.1	1.2	.9	31	2.2%	2.0%	1.6%	.4%
All Hardware Companies	23.8	22.2	.1	5,646	17.0%	36.6%	.1%	77.9%
All Turnkey & SW Companies	116.7	38.4	53.6	1,600	83.0%	63.4%	99.9%	22.1%

Source: Dataquest (July 1994)

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Table 27
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Technical Workstation
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Intergraph	31.5	18.2	4.8	576	33.7%	44.5%	14.4%	38.3%
GDS	26.6	12.2	11.7	531	28.5%	30.0%	35.2%	35.3%
Genasys II	7.4	.7	5.2	18	7.9%	1.8%	15.5%	1.2%
ESRI	7.0	.0	5.4	0	7.5%	.0%	16.3%	.0%
IBM	5.5	5.1	.0	177	5.9%	12.4%	.0%	11.8%
Landmark Graphics	4.0	.9	1.8	14	4.3%	2.1%	5.3%	.9%
Radian Corporation	2.2	.0	1.3	0	2.4%	.0%	4.0%	.0%
Data General	1.4	1.1	.1	82	1.5%	2.7%	.2%	5.5%
Siemens Nixdorf Info systeme	1.3	.7	.1	23	1.4%	1.6%	.4%	1.5%
GeoVision Systems	1.1	.1	.6	2	1.1%	.2%	1.7%	.2%
Other Companies	5.4	1.9	2.3	82	5.8%	4.7%	7.0%	5.5%
All Companies	93.4	40.9	33.3	1,504	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	90.5	39.7	32.5	1,474	96.9%	97.2%	97.5%	98.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	2.9	1.2	.8	30	3.1%	2.8%	2.5%	2.0%
All Hardware Companies	8.3	7.3	.1	320	8.8%	17.8%	.2%	21.3%
All Turnkey & SW Companies	85.1	33.6	33.2	1,184	91.2%	82.2%	99.8%	78.7%

Source: Dataquest (July 1994)

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Table 28
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Host-Dependent
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
IBM	1.1	.6	.2	21	46.6%	48.1%	44.9%	68.6%
Digital	.6	.5	.0	0	23.7%	34.9%	.0%	.0%
Other Companies	.7	.2	.3	10	29.7%	17.1%	55.1%	31.4%
All Companies	2.4	1.3	.5	31	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	2.3	1.3	.5	30	95.3%	96.9%	95.9%	96.3%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.1	.0	.0	1	4.7%	3.1%	4.1%	3.7%
All Hardware Companies	.7	.6	.0	4	28.8%	44.2%	.0%	13.8%
All Turnkey & SW Companies	1.7	.7	.5	27	71.2%	55.8%	100.0%	86.2%

Source: Dataquest (July 1994)

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Table 29
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Server
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
ESRI	6.9	.0	5.3	0	40.8%	.0%	68.7%	.0%
Intergraph	4.0	1.8	1.0	52	23.6%	37.8%	12.6%	40.0%
Landmark Graphics	2.6	.6	1.1	9	15.5%	12.4%	14.7%	6.9%
Sun Microsystems	1.1	.9	.0	23	6.4%	18.7%	.0%	18.0%
Digital	1.0	.8	.0	12	6.0%	17.0%	.0%	9.6%
Other Companies	1.3	.7	.3	33	7.7%	14.1%	4.0%	25.6%
All Companies	17.0	4.8	7.8	130	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	17.0	4.8	7.8	130	100.0%	100.0%	100.0%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	2.9	2.4	.0	68	16.8%	49.0%	.0%	52.3%
All Turnkey & SW Companies	14.1	2.5	7.8	62	83.2%	51.0%	100.0%	47.7%

Source: Dataquest (July 1994)

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Table 30
1993 CAD/CAM/CAE/GIS Market Share Update

Application: GIS/Mapping
Platform: Personal Computer
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	4.6	1.4	2.3	269	16.6%	10.2%	18.9%	4.8%
ESRI	3.5	.0	3.3	0	12.6%	.0%	27.4%	.0%
IBM	1.9	1.9	.0	636	6.9%	14.1%	.0%	11.4%
Autodesk	1.7	.0	1.7	0	6.0%	.0%	13.8%	.0%
MapInfo	1.5	.0	1.3	0	5.5%	.0%	10.9%	.0%
Other Companies	14.6	10.3	3.5	4,676	52.4%	75.7%	29.0%	83.8%
All Companies	27.8	13.6	12.1	5,580	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	27.8	13.6	12.1	5,580	99.7%	100.0%	99.8%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.1	.0	.0	0	.3%	.0%	.2%	.0%
All Hardware Companies	12.0	12.0	.0	5,253	43.2%	88.2%	.0%	94.1%
All Turnkey & SW Companies	15.8	1.6	12.1	327	56.8%	11.8%	100.0%	5.9%

Source: Dataquest (July 1994)

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Table 31
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	362.0	141.1	110.0	7,126	14.8%	11.0%	13.8%	3.6%
IBM	288.9	214.5	40.2	24,313	11.8%	16.7%	5.1%	12.3%
Autodesk	172.3	.0	172.3	0	7.0%	.0%	21.7%	.0%
Fujitsu	151.8	88.1	47.3	5,982	6.2%	6.9%	6.0%	3.0%
Apple Computer	98.6	98.6	.0	24,572	4.0%	7.7%	.0%	12.4%
Hewlett-Packard	85.7	73.8	.0	9,067	3.5%	5.7%	.0%	4.6%
Nemetschek	73.4	22.2	44.7	1,793	3.0%	1.7%	5.6%	.9%
Computervision	66.8	17.7	20.0	909	2.7%	1.4%	2.5%	.5%
NEC	64.5	43.2	15.6	5,325	2.6%	3.4%	2.0%	2.7%
Digital	59.8	51.1	.1	9,566	2.4%	4.0%	.0%	4.8%
IEZ	57.4	19.3	29.6	1,378	2.3%	1.5%	3.7%	.7%
Kozo Keikaku Engineering	50.4	2.3	12.8	93	2.1%	.2%	1.6%	.0%
Nihon Unisys	47.9	27.2	11.6	206	2.0%	2.1%	1.5%	.1%
Technodia	41.1	33.3	.4	533	1.7%	2.6%	.1%	.3%
GDS	28.2	13.0	12.4	442	1.2%	1.0%	1.6%	.2%
Sun Microsystems	23.4	18.7	.0	995	1.0%	1.5%	.0%	.5%
Siemens Nixdorf Info systeme	20.0	10.8	2.9	932	.8%	.8%	.4%	.5%
Toshiba—No OEM	19.4	9.7	7.8	464	.8%	.8%	1.0%	.2%
Hitachi	18.4	8.7	7.9	750	.8%	.7%	1.0%	.4%
Mitsubishi Electric	17.5	13.7	2.2	277	.7%	1.1%	.3%	.1%
Aspen Technology	17.0	.0	11.0	0	.7%	.0%	1.4%	.0%

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Table 31 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
CAD Centre	16.6	.8	11.3	44	.7%	.1%	1.4%	.0%
Auto-Trol	15.3	5.2	6.1	189	.6%	.4%	.8%	.1%
Sony	14.9	14.9	.0	737	.6%	1.2%	.0%	.4%
Soft-Tech Software Technologies	14.7	1.9	11.4	948	.6%	.1%	1.4%	.5%
CPU	14.4	4.8	9.6	343	.6%	.4%	1.2%	.2%
Isicad CAD/CAM Systeme	13.8	3.3	8.2	166	.6%	.3%	1.0%	.1%
Han Dataport	12.7	3.7	6.5	392	.5%	.3%	.8%	.2%
Microway	12.5	7.5	3.8	138	.5%	.6%	.5%	.1%
Wiechers Datentechnik	12.3	4.3	5.5	296	.5%	.3%	.7%	.1%
Kockums Computer Systems	12.1	3.1	4.0	561	.5%	.2%	.5%	.3%
Accugraph	12.1	5.4	5.5	710	.5%	.4%	.7%	.4%
Silicon Graphics	12.0	11.0	.0	401	.5%	.9%	.0%	.2%
Mutoh Industries—No OEM	11.3	5.9	3.9	227	.5%	.5%	.5%	.1%
Eagle Point	10.9	.0	10.9	0	.4%	.0%	1.4%	.0%
Andor	10.0	2.2	7.4	182	.4%	.2%	.9%	.1%
Century Research Center	9.9	5.2	3.7	69	.4%	.4%	.5%	.0%
Technische Computer Systeme	9.3	1.7	6.6	175	.4%	.1%	.8%	.1%
Softdesk	9.2	.0	9.0	0	.4%	.0%	1.1%	.0%
Hitachi Zosen Info Systems	9.1	7.7	.4	81	.4%	.6%	.1%	.0%
Moss Systems	8.1	.9	3.6	75	.3%	.1%	.5%	.0%
Hochtief	7.7	1.3	3.7	95	.3%	.1%	.5%	.0%

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Table 31 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
INS Engineering	7.5	3.7	3.8	34	.3%	.3%	.5%	.0%
RIB/Bausoftware	7.4	.5	6.1	45	.3%	.0%	.8%	.0%
Graphisoft Software Dev	6.7	.0	6.7	0	.3%	.0%	.8%	.0%
Complansoft CAD	6.2	3.1	3.1	149	.3%	.2%	.4%	.1%
International Software Systems	5.6	.0	5.6	0	.2%	.0%	.7%	.0%
mb Programme	5.3	2.2	2.2	120	.2%	.2%	.3%	.1%
Uchida Yoko	5.2	3.1	1.9	145	.2%	.2%	.2%	.1%
EA Systems	5.1	.0	2.2	0	.2%	.0%	.3%	.0%
BATISOFT	5.1	1.8	1.5	339	.2%	.1%	.2%	.2%
Micrografx	4.9	.0	4.9	0	.2%	.0%	.6%	.0%
Sigma Design	4.8	.9	3.5	90	.2%	.1%	.4%	.0%
Star Informatic	4.8	1.0	3.0	91	.2%	.1%	.4%	.0%
Toyo Information Systems-No OEM	4.6	2.7	1.4	51	.2%	.2%	.2%	.0%
Computer Services Consultants	4.2	.0	4.2	0	.2%	.0%	.5%	.0%
RoboCAD Solutions	4.1	.0	3.2	0	.2%	.0%	.4%	.0%
Sweet's Electronic Publishing	4.0	.0	3.1	0	.2%	.0%	.4%	.0%
Gable CAD Systems	4.0	2.8	.6	46	.2%	.2%	.1%	.0%
ItalCad	3.8	1.1	1.6	84	.2%	.1%	.2%	.0%
Datagraphic	3.6	1.7	1.4	63	.1%	.1%	.2%	.0%
ASG	3.5	.0	3.5	0	.1%	.0%	.4%	.0%
Triplan	3.5	1.4	1.7	52	.1%	.1%	.2%	.0%

(Continued)

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Table 31 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
CAD Distribution	3.4	.1	2.9	18	.1%	.0%	.4%	.0%
Sener Inginiera y Sistemaus	3.2	.0	3.2	0	.1%	.0%	.4%	.0%
Foresight Resources	3.1	.0	2.9	0	.1%	.0%	.4%	.0%
ICAD	3.0	.0	2.5	0	.1%	.0%	.3%	.0%
Integrated Computer Graphics	3.0	1.1	1.7	140	.1%	.1%	.2%	.1%
Adam Net	2.9	.4	1.8	6	.1%	.0%	.2%	.0%
Assigraph	2.8	.0	2.3	0	.1%	.0%	.3%	.0%
Ziegler Informatics	2.4	.0	2.4	0	.1%	.0%	.3%	.0%
CADKEY	2.4	.0	2.2	0	.1%	.0%	.3%	.0%
Ground Modelling Systems	2.4	1.2	1.0	223	.1%	.1%	.1%	.1%
Design Automation	2.3	.5	1.8	80	.1%	.0%	.2%	.0%
Lamp Software	2.2	.5	1.6	152	.1%	.0%	.2%	.1%
IMSI	2.2	.0	2.2	0	.1%	.0%	.3%	.0%
American Small Business Comp.	2.2	.0	2.2	0	.1%	.0%	.3%	.0%
Elstree Computing	2.1	.9	1.1	62	.1%	.1%	.1%	.0%
Moda CAD	2.1	.4	1.5	20	.1%	.0%	.2%	.0%
Research Engineers—Civilsoft	2.1	.0	2.1	0	.1%	.0%	.3%	.0%
Carrier Corporation	2.0	.0	2.0	0	.1%	.0%	.3%	.0%
MEDESIGN	1.9	.6	.7	21	.1%	.0%	.1%	.0%
Radan Computational	1.9	.7	1.0	39	.1%	.1%	.1%	.0%
Mitsui Engineering	1.9	1.3	.4	15	.1%	.1%	.0%	.0%

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Table 31 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Softronics	1.8	.4	1.4	135	.1%	.0%	.2%	.1%
Sinus Software	1.7	.9	.6	40	.1%	.1%	.1%	.0%
CADWorks	1.6	.0	1.6	0	.1%	.0%	.2%	.0%
Macao Systems	1.6	.9	.6	16	.1%	.1%	.1%	.0%
GRAPHSOFT	1.5	.0	1.5	0	.1%	.0%	.2%	.0%
ECOM Associates	1.4	.0	1.4	5	.1%	.0%	.2%	.0%
Georgia Tech Research Corp.	1.3	.0	1.3	0	.1%	.0%	.2%	.0%
CAE-link	1.3	.0	1.3	0	.1%	.0%	.2%	.0%
Engineered Software	1.2	.0	1.2	0	.0%	.0%	.2%	.0%
Mucke Software	1.2	.5	.5	25	.0%	.0%	.1%	.0%
ARKTEC	1.1	.1	.9	44	.0%	.0%	.1%	.0%
Land Innovation	1.1	.0	1.1	0	.0%	.0%	.1%	.0%
Evolution Computing	1.0	.0	1.0	0	.0%	.0%	.1%	.0%
Other Companies	258.0	250.4	5.4	95,174	10.6%	19.5%	.7%	48.0%
All Companies	2,444.0	1,284.3	794.1	198,075	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	1,585.6	900.0	461.4	172,036	64.9%	70.1%	58.1%	86.9%
All Asian-Based Companies	505.7	279.1	141.7	15,684	20.7%	21.7%	17.8%	7.9%
All European-Based Companies	352.7	105.2	191.0	10,355	14.4%	8.2%	24.1%	5.2%
All Hardware Companies	732.0	697.7	.0	166,527	29.9%	54.3%	.0%	84.1%
All Turnkey & SW Companies	1,712.0	586.6	794.1	31,549	70.1%	45.7%	100.0%	15.9%

Source: Dataquest (July 1994)

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Table 32
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Intergraph	305.0	122.0	85.6	4,877	25.5%	20.7%	24.5%	20.8%
IBM	129.4	98.0	15.1	3,373	10.8%	16.6%	4.3%	14.4%
Fujitsu	74.4	39.8	24.7	1,686	6.2%	6.8%	7.1%	7.2%
Hewlett-Packard	64.5	54.8	.0	2,561	5.4%	9.3%	.0%	10.9%
Computervision	61.6	16.6	18.1	840	5.2%	2.8%	5.2%	3.6%
IEZ	57.4	19.3	29.6	1,378	4.8%	3.3%	8.5%	5.9%
Technodia	36.1	28.9	.4	405	3.0%	4.9%	.1%	1.7%
Nihon Unisys	35.9	19.8	9.7	145	3.0%	3.4%	2.8%	.6%
NEC	29.7	18.4	8.6	836	2.5%	3.1%	2.5%	3.6%
GDS	28.2	13.0	12.4	442	2.4%	2.2%	3.6%	1.9%
Sun Microsystems	18.7	14.7	.0	883	1.6%	2.5%	.0%	3.8%
CAD Centre	16.6	.8	11.3	44	1.4%	.1%	3.2%	.2%
Siemens Nixdorf Info systeme	16.0	7.0	2.9	240	1.3%	1.2%	.8%	1.0%
Toshiba—No OEM	15.5	7.8	6.2	172	1.3%	1.3%	1.8%	.7%
Nemetschek	15.4	4.7	9.4	182	1.3%	.8%	2.7%	.8%
Auto-Trol	15.3	5.2	6.1	189	1.3%	.9%	1.8%	.8%
Sony	14.9	14.9	.0	737	1.2%	2.5%	.0%	3.1%
Hitachi	13.9	6.5	6.0	275	1.2%	1.1%	1.7%	1.2%
Mitsubishi Electric	13.5	11.5	1.0	127	1.1%	1.9%	.3%	.5%
Aspen Technology	12.8	.0	8.3	0	1.1%	.0%	2.4%	.0%
Kozo Keikaku Engineering	12.6	1.3	3.8	13	1.1%	.2%	1.1%	.1%
Wiechers Datentechnik	12.3	4.3	5.5	296	1.0%	.7%	1.6%	1.3%

(Continued)

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Table 32 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Kockums Computer Systems	12.1	3.1	4.0	561	1.0%	.5%	1.1%	2.4%
Silicon Graphics	11.5	10.6	.0	395	1.0%	1.8%	.0%	1.7%
Accugraph	10.7	5.1	4.5	416	.9%	.9%	1.3%	1.8%
Han Dataport	10.5	2.9	5.4	305	.9%	.5%	1.5%	1.3%
Century Research Center	9.9	5.2	3.7	69	.8%	.9%	1.1%	.3%
Autodesk	9.6	.0	9.6	0	.8%	.0%	2.7%	.0%
Isicad CAD/CAM Systeme	9.4	3.3	3.8	166	.8%	.6%	1.1%	.7%
Microway	8.7	5.3	2.7	86	.7%	.9%	.8%	.4%
Digital	8.2	6.3	.1	414	.7%	1.1%	.0%	1.8%
Moss Systems	8.1	.9	3.6	75	.7%	.2%	1.0%	.3%
Hitachi Zosen Info Systems	8.1	6.8	.4	81	.7%	1.2%	.1%	.3%
Mutoh Industries—No OEM	7.9	3.4	3.0	108	.7%	.6%	.9%	.5%
INS Engineering	6.8	3.4	3.5	19	.6%	.6%	1.0%	.1%
Complansoft CAD	6.2	3.1	3.1	149	.5%	.5%	.9%	.6%
Technische Computer Systeme	5.6	1.1	3.7	61	.5%	.2%	1.1%	.3%
Uchida Yoko	4.7	2.8	1.7	118	.4%	.5%	.5%	.5%
Star Informatic	4.4	.9	2.8	61	.4%	.1%	.8%	.3%
Sigma Design	4.3	.9	3.2	62	.4%	.1%	.9%	.3%
Toyo Information Systems-No OEM	4.0	2.4	1.3	48	.3%	.4%	.4%	.2%
Gable CAD Systems	4.0	2.8	.6	46	.3%	.5%	.2%	.2%
ItalCad	3.8	1.1	1.6	84	.3%	.2%	.5%	.4%
Triplan	3.5	1.4	1.7	52	.3%	.2%	.5%	.2%

(Continued)

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Table 32 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Sener Ingeniera y Sistemaus	3.2	.0	3.2	0	.3%	.0%	.9%	.0%
ICAD	3.0	.0	2.5	0	.3%	.0%	.7%	.0%
Adam Net	2.9	.4	1.8	6	.2%	.1%	.5%	.0%
Assigraph	2.6	.0	2.1	0	.2%	.0%	.6%	.0%
RIB/Bausoftware	2.4	.2	1.9	12	.2%	.0%	.5%	.1%
MEDESIGN	1.9	.6	.7	21	.2%	.1%	.2%	.1%
Radan Computational	1.9	.7	1.0	37	.2%	.1%	.3%	.2%
Integrated Computer Graphics	1.8	.7	1.0	40	.2%	.1%	.3%	.2%
Mitsui Engineering	1.7	1.2	.4	12	.1%	.2%	.1%	.1%
Sinus Software	1.7	.9	.6	40	.1%	.2%	.2%	.2%
EA Systems	1.5	.0	.6	0	.1%	.0%	.2%	.0%
Macao Systems	1.2	.6	.4	13	.1%	.1%	.1%	.1%
Land Innovation	1.1	.0	1.1	0	.1%	.0%	.3%	.0%
Other Companies	6.5	2.1	3.6	179	.5%	.4%	1.0%	.8%
All Companies	1,194.8	589.0	349.2	23,440	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	699.5	351.6	173.9	14,684	58.5%	59.7%	49.8%	62.6%
All Asian-Based Companies	293.3	175.0	76.0	4,935	24.5%	29.7%	21.8%	21.1%
All European-Based Companies	202.1	62.4	99.3	3,821	16.9%	10.6%	28.4%	16.3%
All Hardware Companies	211.8	188.9	.0	8,167	17.7%	32.1%	.0%	34.8%
All Turnkey & SW Companies	983.0	400.1	349.2	15,273	82.3%	67.9%	100.0%	65.2%

Source: Dataquest (July 1994)

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Table 33
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Host-Dependent
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
IBM	54.8	31.4	11.0	926	30.2%	31.1%	27.3%	31.1%
Fujitsu	47.3	21.7	18.9	713	26.0%	21.5%	46.9%	23.9%
Digital	21.3	16.6	.0	0	11.7%	16.4%	.0%	.0%
Nihon Unisys	12.0	7.4	1.9	61	6.6%	7.4%	4.8%	2.0%
Kozo Keikaku Engineering	10.1	.0	2.0	0	5.5%	.0%	5.0%	.0%
Aspen Technology	4.3	.0	2.8	0	2.3%	.0%	6.8%	.0%
EA Systems	3.6	.0	1.5	0	2.0%	.0%	3.7%	.0%
Mitsubishi Electric	2.3	1.1	.6	6	1.3%	1.1%	1.6%	.2%
Hitachi	1.3	.6	.6	312	.7%	.6%	1.4%	10.5%
Hitachi Zosen Info Systems	1.0	.9	.0	0	.6%	.9%	.0%	.0%
Other Companies	23.7	21.3	1.0	963	13.0%	21.1%	2.5%	32.3%
All Companies	181.5	101.0	40.3	2,980	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	106.3	68.7	15.8	1,880	58.6%	68.0%	39.1%	63.1%
All Asian-Based Companies	74.4	32.1	24.2	1,094	41.0%	31.8%	60.0%	36.7%
All European-Based Companies	.8	.2	.4	6	.4%	.2%	1.0%	.2%
All Hardware Companies	43.1	37.3	.0	760	23.8%	36.9%	.0%	25.5%
All Turnkey & SW Companies	138.3	63.7	40.3	2,220	76.2%	63.1%	100.0%	74.5%

Source: Dataquest (July 1994)

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Table 34
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Server
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
IBM	25.7	14.9	5.8	298	39.2%	44.6%	39.8%	32.8%
Intergraph	20.8	8.3	6.3	296	31.8%	24.9%	42.9%	32.6%
Sun Microsystems	4.8	4.0	.0	111	7.3%	11.8%	.0%	12.2%
Computervision	4.4	1.2	1.1	51	6.7%	3.5%	7.7%	5.6%
Digital	3.3	2.6	.0	42	5.0%	7.7%	.0%	4.6%
Kozo Keikaku Engineering	2.5	.0	.5	0	3.9%	.0%	3.4%	.0%
Hewlett-Packard	1.6	1.3	.0	25	2.4%	3.8%	.0%	2.8%
Han Dataport	1.4	.6	.6	41	2.1%	1.9%	3.8%	4.5%
Other Companies	1.1	.6	.4	46	1.6%	1.7%	2.4%	5.0%
All Companies	65.5	33.4	14.6	910	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	61.5	32.7	13.5	863	93.9%	97.9%	92.7%	94.8%
All Asian-Based Companies	2.6	.1	.5	7	4.0%	.2%	3.4%	.7%
All European-Based Companies	1.4	.6	.6	41	2.1%	1.9%	3.8%	4.5%
All Hardware Companies	13.0	10.9	.0	250	19.9%	32.7%	.0%	27.4%
All Turnkey & SW Companies	52.4	22.5	14.6	661	80.1%	67.3%	100.0%	72.6%

Source: Dataquest (July 1994)

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Table 35
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Personal Computer
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Autodesk	162.7	.0	162.7	0	16.2%	.0%	41.7%	.0%
Apple Computer	98.6	98.6	.0	24,572	9.8%	17.6%	.0%	14.4%
IBM	79.0	70.2	8.3	19,715	7.9%	12.5%	2.1%	11.5%
Nemetschek	58.0	17.5	35.3	1,611	5.8%	3.1%	9.1%	.9%
Intergraph	36.2	10.9	18.1	1,953	3.6%	1.9%	4.6%	1.1%
NEC	34.8	24.7	7.0	4,490	3.5%	4.4%	1.8%	2.6%
Fujitsu	30.2	26.6	3.7	3,584	3.0%	4.7%	.9%	2.1%
Digital	27.0	25.6	.0	9,110	2.7%	4.6%	.0%	5.3%
Kozo Keikaku Engineering	25.2	1.0	6.5	80	2.5%	.2%	1.7%	.0%
Hewlett-Packard	19.6	17.7	.0	6,480	2.0%	3.1%	.0%	3.8%
Soft-Tech Software Technologies	14.7	1.9	11.4	948	1.5%	.3%	2.9%	.6%
CPU	14.4	4.8	9.6	343	1.4%	.8%	2.5%	.2%
Eagle Point	10.9	.0	10.9	0	1.1%	.0%	2.8%	.0%
Andor	10.0	2.2	7.4	182	1.0%	.4%	1.9%	.1%
Softdesk	8.7	.0	8.5	0	.9%	.0%	2.2%	.0%
Hochtief	7.6	1.3	3.6	94	.8%	.2%	.9%	.1%
Graphisoft Software Dev	6.7	.0	6.7	0	.7%	.0%	1.7%	.0%
International Software Systems	5.6	.0	5.6	0	.6%	.0%	1.4%	.0%
mb Programme	5.3	2.2	2.2	120	.5%	.4%	.6%	.1%
BATISOFT	5.1	1.8	1.5	339	.5%	.3%	.4%	.2%
RIB/Bausoftware	5.0	.3	4.2	33	.5%	.1%	1.1%	.0%
Technodia	4.9	4.4	.1	128	.5%	.8%	.0%	.1%

(Continued)

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Table 35 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Personal Computer
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Micrografx	4.9	.0	4.9	0	.5%	.0%	1.3%	.0%
Isicad CAD/CAM Systeme	4.4	.0	4.4	0	.4%	.0%	1.1%	.0%
Computer Services Consultants	4.2	.0	4.2	0	.4%	.0%	1.1%	.0%
RoboCAD Solutions	4.1	.0	3.2	0	.4%	.0%	.8%	.0%
Siemens Nixdorf Info systeme	4.0	3.8	.0	692	.4%	.7%	.0%	.4%
Sweet's Electronic Publishing	4.0	.0	3.1	0	.4%	.0%	.8%	.0%
Toshiba—No OEM	3.9	1.9	1.6	291	.4%	.3%	.4%	.2%
Microway	3.8	2.2	1.1	52	.4%	.4%	.3%	.0%
Technische Computer Systeme	3.7	.7	2.9	114	.4%	.1%	.7%	.1%
Datagraphic	3.6	1.7	1.4	63	.4%	.3%	.4%	.0%
Mutoh Industries—No OEM	3.4	2.5	.9	120	.3%	.4%	.2%	.1%
ASG	3.3	.0	3.3	0	.3%	.0%	.9%	.0%
CAD Distribution	3.2	.1	2.8	17	.3%	.0%	.7%	.0%
Hitachi	3.2	1.5	1.4	162	.3%	.3%	.4%	.1%
Foresight Resources	3.1	.0	2.9	0	.3%	.0%	.7%	.0%
Ziegler Informatics	2.4	.0	2.4	0	.2%	.0%	.6%	.0%
CADKEY	2.4	.0	2.2	0	.2%	.0%	.6%	.0%
Ground Modelling Systems	2.4	1.2	1.0	223	.2%	.2%	.3%	.1%
Design Automation	2.3	.5	1.8	80	.2%	.1%	.5%	.0%
American Small Business Comp.	2.2	.0	2.2	0	.2%	.0%	.6%	.0%
IMSI	2.2	.0	2.2	0	.2%	.0%	.6%	.0%
Moda CAD	2.1	.4	1.5	20	.2%	.1%	.4%	.0%

(Continued)

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Table 35 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Personal Computer
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Elstree Computing	2.1	.9	1.1	62	.2%	.2%	.3%	.0%
Carrier Corporation	2.0	.0	2.0	0	.2%	.0%	.5%	.0%
Research Engineers—Civilsoft	1.9	.0	1.9	0	.2%	.0%	.5%	.0%
Softronics	1.8	.4	1.4	135	.2%	.1%	.4%	.1%
Mitsubishi Electric	1.8	1.2	.6	145	.2%	.2%	.2%	.1%
CADWorks	1.6	.0	1.6	0	.2%	.0%	.4%	.0%
Lamp Software	1.5	.3	1.2	101	.2%	.1%	.3%	.1%
GRAPHSOFT	1.5	.0	1.5	0	.2%	.0%	.4%	.0%
ECOM Associates	1.4	.0	1.4	5	.1%	.0%	.4%	.0%
CAE-link	1.3	.0	1.3	0	.1%	.0%	.3%	.0%
Engineered Software	1.2	.0	1.2	0	.1%	.0%	.3%	.0%
Integrated Computer Graphics	1.2	.4	.6	100	.1%	.1%	.2%	.1%
Mucke Software	1.2	.5	.5	25	.1%	.1%	.1%	.0%
Evolution Computing	1.0	.0	1.0	0	.1%	.0%	.3%	.0%
Other Companies	238.1	229.1	8.3	94,557	23.8%	40.8%	2.1%	55.4%
All Companies	1,002.3	561.0	390.0	170,745	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	718.4	447.0	258.3	154,610	71.7%	79.7%	66.2%	90.6%
All Asian-Based Companies	135.4	72.0	41.0	9,648	13.5%	12.8%	10.5%	5.7%
All European-Based Companies	148.5	42.0	90.8	6,487	14.8%	7.5%	23.3%	3.8%
All Hardware Companies	464.0	460.7	.0	157,350	46.3%	82.1%	.0%	92.2%
All Turnkey & SW Companies	538.3	100.3	390.0	13,395	53.7%	17.9%	100.0%	7.8%

Source: Dataquest (July 1994)

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Table 36
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: North America
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Intergraph	202.7	79.6	60.9	4,142	26.3%	19.7%	24.4%	5.0%
IBM	103.6	78.6	13.1	9,567	13.5%	19.4%	5.3%	11.7%
Autodesk	81.0	.0	81.0	0	10.5%	.0%	32.4%	.0%
Apple Computer	67.6	67.6	.0	17,795	8.8%	16.7%	.0%	21.7%
Hewlett-Packard	40.1	34.8	.0	6,275	5.2%	8.6%	.0%	7.7%
Digital	29.1	24.8	.1	5,152	3.8%	6.1%	.0%	6.3%
Computervision	26.3	8.3	5.8	376	3.4%	2.0%	2.3%	.5%
Auto-Trol	12.9	4.4	5.2	159	1.7%	1.1%	2.1%	.2%
Sun Microsystems	12.8	10.2	.0	589	1.7%	2.5%	.0%	.7%
Accugraph	11.1	5.0	5.1	653	1.4%	1.2%	2.0%	.8%
Eagle Point	10.9	.0	10.9	0	1.4%	.0%	4.4%	.0%
Aspen Technology	8.5	.0	5.5	0	1.1%	.0%	2.2%	.0%
Isicad CAD/CAM Systeme	7.4	1.8	4.4	88	1.0%	.4%	1.8%	.1%
Softdesk	7.2	.0	7.1	0	.9%	.0%	2.8%	.0%
GDS	6.4	2.9	2.8	127	.8%	.7%	1.1%	.2%
CAD Centre	5.8	.0	4.2	0	.8%	.0%	1.7%	.0%
Silicon Graphics	5.3	4.7	.0	204	.7%	1.1%	.0%	.2%
Sweet's Electronic Publishing	3.8	.0	3.0	0	.5%	.0%	1.2%	.0%
ASG	3.3	.0	3.3	0	.4%	.0%	1.3%	.0%

(Continued)

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Table 36 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
EA Systems	3.1	.0	1.3	0	.4%	.0%	.5%	.0%
Integrated Computer Graphics	3.0	1.1	1.7	140	.4%	.3%	.7%	.2%
International Software Systems	2.9	.0	2.9	0	.4%	.0%	1.1%	.0%
Micrografx	2.8	.0	2.8	0	.4%	.0%	1.1%	.0%
Foresight Resources	2.6	.0	2.4	0	.3%	.0%	1.0%	.0%
Sigma Design	2.6	.5	1.9	49	.3%	.1%	.8%	.1%
ICAD	2.2	.0	1.8	0	.3%	.0%	.7%	.0%
Research Engineers—Civilsoft	2.1	.0	2.1	0	.3%	.0%	.8%	.0%
American Small Business Comp.	1.9	.0	1.9	0	.2%	.0%	.8%	.0%
IMSI	1.7	.0	1.7	0	.2%	.0%	.7%	.0%
GRAPHSOFT	1.5	.0	1.5	0	.2%	.0%	.6%	.0%
Graphisoft Software Dev	1.4	.0	1.4	0	.2%	.0%	.6%	.0%
ECOM Associates	1.4	.0	1.4	5	.2%	.0%	.6%	.0%
Moda CAD	1.4	.3	1.0	14	.2%	.1%	.4%	.0%
Technische Computer Systeme	1.4	.3	1.0	26	.2%	.1%	.4%	.0%
CADKEY	1.3	.0	1.2	0	.2%	.0%	.5%	.0%
CAE-link	1.2	.0	1.2	0	.2%	.0%	.5%	.0%
Kockums Computer Systems	1.1	.3	.7	50	.1%	.1%	.3%	.1%
Land Innovation	1.1	.0	1.1	0	.1%	.0%	.4%	.0%

(Continued)

CAEC-WW-MS-9403

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Table 36 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Carrier Corporation	1.0	.0	1.0	0	.1%	.0%	.4%	.0%
Other Companies	86.1	79.6	5.6	36,608	11.2%	19.7%	2.3%	44.6%
All Companies	769.6	404.6	249.9	82,020	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	758.3	403.6	241.8	81,899	98.5%	99.8%	96.8%	99.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	11.3	1.0	8.1	122	1.5%	.2%	3.2%	.1%
All Hardware Companies	290.8	275.1	.0	75,328	37.8%	68.0%	.0%	91.8%
All Turnkey & SW Companies	478.7	129.5	249.9	6,692	62.2%	32.0%	100.0%	8.2%

Source: Dataquest (July 1994)

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Table 37
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Technical Workstation
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	174.3	70.3	48.3	2,830	49.6%	42.0%	51.5%	37.1%
IBM	48.4	37.8	5.4	1,469	13.8%	22.6%	5.8%	19.2%
Hewlett-Packard	24.0	20.4	.0	1,150	6.8%	12.2%	.0%	15.1%
Computervision	21.9	7.3	4.2	313	6.2%	4.3%	4.5%	4.1%
Auto-Trol	12.9	4.4	5.2	159	3.7%	2.6%	5.5%	2.1%
Sun Microsystems	9.9	7.8	.0	518	2.8%	4.7%	.0%	6.8%
Accugraph	9.8	4.7	4.1	382	2.8%	2.8%	4.4%	5.0%
Aspen Technology	6.4	.0	4.1	0	1.8%	.0%	4.4%	.0%
GDS	6.4	2.9	2.8	127	1.8%	1.8%	3.0%	1.7%
CAD Centre	5.8	.0	4.2	0	1.6%	.0%	4.5%	.0%
Silicon Graphics	5.3	4.7	.0	204	1.5%	2.8%	.0%	2.7%
Isicad CAD/CAM Systeme	5.1	1.8	2.0	88	1.4%	1.1%	2.2%	1.2%
Autodesk	4.1	.0	4.1	0	1.2%	.0%	4.3%	.0%
Digital	4.0	3.0	.1	225	1.1%	1.8%	.1%	2.9%
Sigma Design	2.4	.5	1.7	34	.7%	.3%	1.9%	.4%
ICAD	2.2	.0	1.8	0	.6%	.0%	1.9%	.0%
Integrated Computer Graphics	1.8	.7	1.0	40	.5%	.4%	1.1%	.5%
Kockums Computer Systems	1.1	.3	.7	50	.3%	.2%	.7%	.7%

(Continued)

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Table 37 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Technical Workstation
Region: North America
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Land Innovation	1.1	.0	1.1	0	.3%	.0%	1.1%	.0%
Other Companies	5.0	.9	3.0	45	1.4%	.5%	3.2%	.6%
All Companies	351.6	167.3	93.9	7,637	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	342.6	166.5	87.8	7,555	97.4%	99.5%	93.5%	98.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	9.0	.8	6.1	82	2.6%	.5%	6.5%	1.1%
All Hardware Companies	76.3	66.4	.0	3,294	21.7%	39.7%	.0%	43.1%
All Turnkey & SW Companies	275.3	100.9	93.9	4,342	78.3%	60.3%	100.0%	56.9%

Source: Dataquest (July 1994)

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Table 38
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Host-Dependent
Region: North America
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
IBM	21.9	12.5	4.4	424	52.8%	50.1%	63.0%	56.2%
Digital	10.6	8.3	.0	0	25.5%	33.1%	.1%	.0%
EA Systems	2.1	.0	.9	0	5.2%	.0%	13.1%	.0%
Aspen Technology	2.1	.0	1.4	0	5.1%	.0%	19.9%	.0%
Other Companies	4.7	4.2	.3	330	11.3%	16.8%	3.9%	43.8%
All Companies	41.5	24.9	7.0	755	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	41.5	24.9	7.0	755	100.0%	100.0%	100.0%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	15.0	12.4	.0	152	36.1%	49.8%	.0%	20.2%
All Turnkey & SW Companies	26.5	12.5	7.0	602	63.9%	50.2%	100.0%	79.8%

Source: Dataquest (July 1994)

CAEC-WW-MS-9403

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Table 39
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Server
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
IBM	9.4	5.6	2.2	128	34.1%	38.6%	36.4%	28.7%
Intergraph	8.1	3.2	2.4	128	29.6%	22.2%	41.0%	28.8%
Computervision	3.9	1.0	1.0	45	14.1%	6.9%	17.2%	10.0%
Sun Microsystems	2.8	2.4	.0	71	10.4%	16.1%	.0%	15.9%
Digital	1.6	1.3	.0	23	5.9%	8.6%	.0%	5.2%
Hewlett-Packard	1.2	1.0	.0	21	4.4%	6.9%	.0%	4.6%
Other Companies	.5	.1	.3	30	1.6%	.6%	5.4%	6.7%
All Companies	27.4	14.6	5.9	446	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	27.4	14.6	5.9	446	100.0%	100.0%	100.0%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	6.8	5.7	.0	143	24.9%	39.1%	.0%	32.0%
All Turnkey & SW Companies	20.6	8.9	5.9	303	75.1%	60.9%	100.0%	68.0%

Source: Dataquest (July 1994)

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Table 40
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Personal Computer
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Autodesk	76.9	.0	76.9	0	22.0%	.0%	53.7%	.0%
Apple Computer	67.6	67.6	.0	17,795	19.4%	34.2%	.0%	24.3%
IBM	23.9	22.7	1.2	7,546	6.8%	11.5%	.8%	10.3%
Intergraph	20.3	6.1	10.1	1,183	5.8%	3.1%	7.1%	1.6%
Hewlett-Packard	14.9	13.4	.0	5,104	4.3%	6.8%	.0%	7.0%
Digital	12.9	12.3	.0	4,904	3.7%	6.2%	.0%	6.7%
Eagle Point	10.9	.0	10.9	0	3.1%	.0%	7.6%	.0%
Softdesk	6.8	.0	6.7	0	2.0%	.0%	4.7%	.0%
Sweet's Electronic Publishing	3.8	.0	3.0	0	1.1%	.0%	2.1%	.0%
ASG	3.2	.0	3.2	0	.9%	.0%	2.2%	.0%
International Software Systems	2.9	.0	2.9	0	.8%	.0%	2.0%	.0%
Micrografx	2.8	.0	2.8	0	.8%	.0%	1.9%	.0%
Foresight Resources	2.6	.0	2.4	0	.7%	.0%	1.7%	.0%
Isicad CAD/CAM Systeme	2.4	.0	2.4	0	.7%	.0%	1.7%	.0%
American Small Business Comp.	1.9	.0	1.9	0	.6%	.0%	1.3%	.0%
Research Engineers—Civilsoft	1.9	.0	1.9	0	.5%	.0%	1.3%	.0%
IMSI	1.7	.0	1.7	0	.5%	.0%	1.2%	.0%
GRAPHSOFT	1.5	.0	1.5	0	.4%	.0%	1.1%	.0%
Graphisoft Software Dev	1.4	.0	1.4	0	.4%	.0%	1.0%	.0%
Moda CAD	1.4	.3	1.0	14	.4%	.1%	.7%	.0%
ECOM Associates	1.4	.0	1.4	5	.4%	.0%	1.0%	.0%

(Continued)

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Table 40 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Personal Computer
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
CADKEY	1.3	.0	1.2	0	.4%	.0%	.9%	.0%
Integrated Computer Graphics	1.2	.4	.6	100	.3%	.2%	.4%	.1%
CAE-link	1.2	.0	1.2	0	.3%	.0%	.8%	.0%
Carrier Corporation	1.0	.0	1.0	0	.3%	.0%	.7%	.0%
Other Companies	81.3	75.0	5.9	36,534	23.3%	37.9%	4.2%	49.9%
All Companies	349.0	197.8	143.1	73,183	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	346.8	197.6	141.2	73,144	99.4%	99.9%	98.6%	99.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	2.3	.2	2.0	40	.6%	.1%	1.4%	.1%
All Hardware Companies	192.7	190.6	.0	71,739	55.2%	96.3%	.0%	98.0%
All Turnkey & SW Companies	156.3	7.2	143.1	1,445	44.8%	3.7%	100.0%	2.0%

Source: Dataquest (July 1994)

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Table 41
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
IBM	128.4	101.2	13.0	11,360	14.3%	22.5%	4.1%	15.1%
Intergraph	126.7	47.9	40.1	2,363	14.2%	10.6%	12.8%	3.1%
Nemetschek	73.4	22.2	44.7	1,793	8.2%	4.9%	14.3%	2.4%
Autodesk	56.9	.0	56.9	0	6.4%	.0%	18.1%	.0%
IEZ	54.0	18.2	27.8	1,295	6.0%	4.0%	8.9%	1.7%
Hewlett-Packard	28.5	24.4	.0	1,692	3.2%	5.4%	.0%	2.2%
Computervision	25.7	5.9	7.6	374	2.9%	1.3%	2.4%	.5%
Digital	24.5	21.1	.0	3,621	2.7%	4.7%	.0%	4.8%
Apple Computer	20.4	20.4	.0	4,292	2.3%	4.5%	.0%	5.7%
Siemens Nixdorf Info systeme	20.0	10.8	2.9	932	2.2%	2.4%	.9%	1.2%
Soft-Tech Software Technologies	14.7	1.9	11.4	948	1.6%	.4%	3.6%	1.3%
Han Dataport	12.7	3.7	6.5	392	1.4%	.8%	2.1%	.5%
Microway	12.5	7.5	3.8	138	1.4%	1.7%	1.2%	.2%
Wiechers Datentechnik	12.3	4.3	5.5	296	1.4%	1.0%	1.8%	.4%
CAD Centre	8.3	.8	5.3	44	.9%	.2%	1.7%	.1%
Kockums Computer Systems	8.0	2.1	1.4	370	.9%	.5%	.5%	.5%
Technische Computer Systeme	7.9	1.5	5.6	148	.9%	.3%	1.8%	.2%
Hochtief	7.4	1.3	3.5	91	.8%	.3%	1.1%	.1%
RIB/Bausoftware	7.4	.5	6.1	45	.8%	.1%	2.0%	.1%
GDS	6.8	3.1	3.0	108	.8%	.7%	1.0%	.1%
Moss Systems	6.7	.9	2.9	71	.8%	.2%	.9%	.1%

(Continued)

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Table 41 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Complansoft CAD	6.2	3.1	3.1	148	.7%	.7%	1.0%	.2%
Sun Microsystems	6.0	4.7	.0	225	.7%	1.0%	.0%	.3%
Isicad CAD/CAM Systeme	5.6	1.4	3.3	65	.6%	.3%	1.1%	.1%
mb Programme	5.3	2.2	2.2	120	.6%	.5%	.7%	.2%
Graphisoft Software Dev	4.9	.0	4.9	0	.5%	.0%	1.6%	.0%
BATISOFT	4.8	1.8	1.4	322	.5%	.4%	.4%	.4%
Star Informatic	4.3	.9	2.7	83	.5%	.2%	.9%	.1%
Aspen Technology	4.3	.0	2.8	0	.5%	.0%	.9%	.0%
Computer Services Consultants	4.2	.0	4.2	0	.5%	.0%	1.3%	.0%
RoboCAD Solutions	4.1	.0	3.2	0	.5%	.0%	1.0%	.0%
Gable CAD Systems	3.9	2.8	.6	44	.4%	.6%	.2%	.1%
ItalCad	3.8	1.1	1.6	84	.4%	.2%	.5%	.1%
Datagraphic	3.6	1.7	1.4	63	.4%	.4%	.5%	.1%
Triplan	3.5	1.4	1.7	52	.4%	.3%	.6%	.1%
CAD Distribution	3.4	.1	2.9	18	.4%	.0%	.9%	.0%
Silicon Graphics	3.2	2.8	.0	95	.4%	.6%	.0%	.1%
Sener Inginiera y Sistemaus	3.2	.0	3.2	0	.4%	.0%	1.0%	.0%
Assigraph	2.8	.0	2.3	0	.3%	.0%	.7%	.0%
Ziegler Informatics	2.4	.0	2.4	0	.3%	.0%	.8%	.0%
Ground Modelling Systems	2.3	1.2	.9	211	.3%	.3%	.3%	.3%
Lamp Software	2.2	.5	1.6	152	.2%	.1%	.5%	.2%

(Continued)

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Table 41 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Elstree Computing	2.1	.9	1.1	62	.2%	.2%	.4%	.1%
Micrografx	2.1	.0	2.1	0	.2%	.0%	.7%	.0%
Auto-Trol	1.8	.6	.7	23	.2%	.1%	.2%	.0%
Radan Computational	1.8	.6	.9	36	.2%	.1%	.3%	.0%
Softronics	1.8	.4	1.4	135	.2%	.1%	.4%	.2%
Sinus Software	1.7	.9	.6	40	.2%	.2%	.2%	.1%
MEDESIGN	1.7	.5	.6	18	.2%	.1%	.2%	.0%
Macao Systems	1.6	.8	.6	16	.2%	.2%	.2%	.0%
Mucke Software	1.2	.5	.5	25	.1%	.1%	.1%	.0%
ARKTEC	1.1	.1	.9	44	.1%	.0%	.3%	.1%
CADKEY	1.1	.0	1.0	0	.1%	.0%	.3%	.0%
Sigma Design	1.1	.2	.8	21	.1%	.0%	.3%	.0%
Other Companies	129.3	119.7	7.8	42,753	14.4%	26.6%	2.5%	56.8%
All Companies	895.1	450.4	313.4	75,229	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	564.7	348.2	137.1	65,231	63.1%	77.3%	43.8%	86.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	330.5	102.2	176.2	9,999	36.9%	22.7%	56.2%	13.3%
All Hardware Companies	281.6	268.0	.0	63,239	31.5%	59.5%	.0%	84.1%
All Turnkey & SW Companies	613.5	182.3	313.4	11,990	68.5%	40.5%	100.0%	15.9%

Source: Dataquest (July 1994)

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Table 42
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Technical Workstation
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	102.6	39.5	30.4	1,590	23.6%	20.4%	21.3%	18.2%
IBM	66.7	52.4	5.9	1,671	15.3%	27.1%	4.1%	19.2%
IEZ	54.0	18.2	27.8	1,295	12.4%	9.4%	19.5%	14.8%
Hewlett-Packard	25.8	21.9	.0	894	5.9%	11.3%	.0%	10.2%
Computervision	25.6	5.9	7.6	373	5.9%	3.0%	5.4%	4.3%
Siemens Nixdorf Info systeme	16.0	7.0	2.9	240	3.7%	3.6%	2.0%	2.8%
Nemetschek	15.4	4.7	9.4	182	3.5%	2.4%	6.6%	2.1%
Wiechers Datentechnik	12.3	4.3	5.5	296	2.8%	2.2%	3.9%	3.4%
Han Dataport	10.5	2.9	5.4	305	2.4%	1.5%	3.8%	3.5%
Microway	8.7	5.3	2.7	86	2.0%	2.7%	1.9%	1.0%
CAD Centre	8.3	.8	5.3	44	1.9%	.4%	3.7%	.5%
Kockums Computer Systems	8.0	2.1	1.4	370	1.8%	1.1%	1.0%	4.2%
GDS	6.8	3.1	3.0	108	1.6%	1.6%	2.1%	1.2%
Moss Systems	6.7	.9	2.9	71	1.5%	.5%	2.0%	.8%
Complansoft CAD	6.2	3.1	3.1	148	1.4%	1.6%	2.2%	1.7%
Technische Computer Systeme	4.7	.9	3.2	52	1.1%	.5%	2.2%	.6%
Sun Microsystems	4.5	3.5	.0	194	1.0%	1.8%	.0%	2.2%
Star Informatic	4.0	.8	2.5	55	.9%	.4%	1.8%	.6%
Gable CAD Systems	3.9	2.8	.6	44	.9%	1.4%	.4%	.5%
Isicad CAD/CAM Systeme	3.8	1.4	1.5	65	.9%	.7%	1.1%	.7%
ItalCad	3.8	1.1	1.6	84	.9%	.6%	1.1%	1.0%

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Table 42 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Technical Workstation
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Triplan	3.5	1.4	1.7	52	.8%	.7%	1.2%	.6%
Digital	3.4	2.6	.0	158	.8%	1.4%	.0%	1.8%
Sener Inginiera y Sistemaus	3.2	.0	3.2	0	.7%	.0%	2.3%	.0%
Aspen Technology	3.2	.0	2.1	0	.7%	.0%	1.5%	.0%
Autodesk	2.9	.0	2.9	0	.7%	.0%	2.0%	.0%
Silicon Graphics	2.8	2.4	.0	89	.6%	1.2%	.0%	1.0%
Assigraph	2.6	.0	2.1	0	.6%	.0%	1.5%	.0%
RIB/Bausoftware	2.4	.2	1.9	12	.5%	.1%	1.3%	.1%
Auto-Trol	1.8	.6	.7	23	.4%	.3%	.5%	.3%
Radan Computational	1.8	.6	.9	34	.4%	.3%	.6%	.4%
Sinus Software	1.7	.9	.6	40	.4%	.5%	.4%	.5%
MEDESIGN	1.7	.5	.6	18	.4%	.2%	.4%	.2%
Macao Systems	1.2	.6	.4	13	.3%	.3%	.3%	.1%
Other Companies	5.1	1.4	2.9	117	1.2%	.7%	2.0%	1.3%
All Companies	435.2	193.6	142.5	8,725	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	252.2	134.0	55.4	5,207	58.0%	69.2%	38.9%	59.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	183.0	59.6	87.1	3,518	42.0%	30.8%	61.1%	40.3%
All Hardware Companies	81.3	71.8	.0	2,686	18.7%	37.1%	.0%	30.8%
All Turnkey & SW Companies	353.8	121.9	142.5	6,039	81.3%	62.9%	100.0%	69.2%

Source: Dataquest (July 1994)

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Table 43
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Host-Dependent
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
IBM	16.5	9.5	3.3	283	43.6%	36.0%	71.7%	42.6%
Digital	8.5	6.6	.0	0	22.4%	25.1%	.0%	.0%
Aspen Technology	1.1	.0	.7	0	2.8%	.0%	14.8%	.0%
Other Companies	11.8	10.3	.6	381	31.2%	38.9%	13.5%	57.4%
All Companies	37.8	26.3	4.7	664	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	37.0	26.1	4.3	658	98.0%	99.1%	91.6%	99.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.8	.2	.4	6	2.0%	.9%	8.4%	.9%
All Hardware Companies	19.0	16.6	.0	367	50.4%	63.1%	.0%	55.3%
All Turnkey & SW Companies	18.7	9.7	4.7	296	49.6%	36.9%	100.0%	44.7%

Source: Dataquest (July 1994)

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Table 44
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Server
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	11.4	4.5	3.4	152	43.4%	33.0%	56.1%	41.6%
IBM	10.1	5.9	2.1	117	38.3%	42.9%	34.5%	32.2%
Sun Microsystems	1.4	1.2	.0	30	5.5%	8.6%	.0%	8.3%
Han Dataport	1.4	.6	.6	41	5.3%	4.6%	9.2%	11.2%
Digital	1.3	1.1	.0	15	5.0%	7.6%	.0%	4.2%
Other Companies	.7	.4	.0	9	2.5%	3.3%	.2%	2.5%
All Companies	26.3	13.8	6.1	364	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	24.9	13.1	5.6	324	94.7%	95.4%	90.8%	88.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.4	.6	.6	41	5.3%	4.6%	9.2%	11.2%
All Hardware Companies	4.8	4.1	.0	80	18.4%	29.8%	.0%	21.9%
All Turnkey & SW Companies	21.4	9.7	6.1	285	81.6%	70.2%	100.0%	78.1%

Source: Dataquest (July 1994)

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Table 45
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Personal Computer
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Nemetschek	58.0	17.5	35.3	1,611	14.6%	8.1%	22.1%	2.5%
Autodesk	54.0	.0	54.0	0	13.6%	.0%	33.7%	.0%
IBM	35.2	33.5	1.7	9,289	8.9%	15.4%	1.0%	14.2%
Apple Computer	20.4	20.4	.0	4,292	5.1%	9.4%	.0%	6.6%
Soft-Tech Software Technologies	14.7	1.9	11.4	948	3.7%	.9%	7.1%	1.4%
Intergraph	12.7	3.8	6.3	621	3.2%	1.8%	4.0%	.9%
Digital	11.3	10.8	.0	3,447	2.9%	5.0%	.0%	5.3%
Hochtief	7.3	1.2	3.5	90	1.8%	.6%	2.2%	.1%
mb Programme	5.3	2.2	2.2	120	1.3%	1.0%	1.4%	.2%
RIB/Bausoftware	5.0	.3	4.2	33	1.3%	.2%	2.6%	.1%
Graphisoft Software Dev	4.9	.0	4.9	0	1.2%	.0%	3.0%	.0%
BATISOFT	4.8	1.8	1.4	322	1.2%	.8%	.9%	.5%
Computer Services Consultants	4.2	.0	4.2	0	1.1%	.0%	2.6%	.0%
RoboCAD Solutions	4.1	.0	3.2	0	1.0%	.0%	2.0%	.0%
Siemens Nixdorf Info systeme	4.0	3.8	.0	692	1.0%	1.8%	.0%	1.1%
Microway	3.8	2.2	1.1	52	1.0%	1.0%	.7%	.1%
Datagraphic	3.6	1.7	1.4	63	.9%	.8%	.9%	.1%
CAD Distribution	3.2	.1	2.8	17	.8%	.0%	1.7%	.0%
Technische Computer Systeme	3.1	.6	2.4	97	.8%	.3%	1.5%	.1%
Hewlett-Packard	2.8	2.5	.0	799	.7%	1.1%	.0%	1.2%
Ziegler Informatics	2.4	.0	2.4	0	.6%	.0%	1.5%	.0%

(Continued)

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Table 45 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Personal Computer
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Ground Modelling Systems	2.3	1.2	.9	211	.6%	.5%	.6%	.3%
Elstree Computing	2.1	.9	1.1	62	.5%	.4%	.7%	.1%
Micrografx	2.1	.0	2.1	0	.5%	.0%	1.3%	.0%
Isicad CAD/CAM Systeme	1.8	.0	1.8	0	.5%	.0%	1.1%	.0%
Softronics	1.8	.4	1.4	135	.4%	.2%	.9%	.2%
Lamp Software	1.5	.3	1.2	101	.4%	.1%	.7%	.2%
Mucke Software	1.2	.5	.5	25	.3%	.2%	.3%	.0%
CADKEY	1.1	.0	1.0	0	.3%	.0%	.6%	.0%
Other Companies	117.4	109.2	7.7	42,450	29.7%	50.4%	4.8%	64.8%
All Companies	395.9	216.6	160.1	65,476	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	250.6	174.9	71.9	59,042	63.3%	80.7%	44.9%	90.2%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	145.3	41.7	88.2	6,434	36.7%	19.3%	55.1%	9.8%
All Hardware Companies	176.4	175.6	.0	60,106	44.6%	81.0%	.0%	91.8%
All Turnkey & SW Companies	219.5	41.1	160.1	5,370	55.4%	19.0%	100.0%	8.2%

Source: Dataquest (July 1994)

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Table 46
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Fujitsu	151.8	88.1	47.3	5,982	20.7%	21.8%	21.9%	17.3%
NEC	64.5	43.2	15.6	5,325	8.8%	10.7%	7.2%	15.4%
Kozo Keikaku Engineering	50.4	2.3	12.8	93	6.9%	.6%	6.0%	.3%
IBM	49.7	28.9	13.4	2,632	6.8%	7.1%	6.2%	7.6%
Nihon Unisys	47.9	27.2	11.6	206	6.5%	6.7%	5.4%	.6%
Technodia	41.1	33.3	.4	533	5.6%	8.2%	.2%	1.5%
Autodesk	27.6	.0	27.6	0	3.8%	.0%	12.8%	.0%
Intergraph	25.4	10.7	7.0	445	3.5%	2.6%	3.2%	1.3%
Toshiba—No OEM	19.4	9.7	7.8	464	2.6%	2.4%	3.6%	1.3%
Hitachi	18.4	8.7	7.9	750	2.5%	2.1%	3.7%	2.2%
Mitsubishi Electric	17.5	13.7	2.2	277	2.4%	3.4%	1.0%	.8%
Hewlett-Packard	15.6	13.3	.0	728	2.1%	3.3%	.0%	2.1%
Sony	14.9	14.9	.0	737	2.0%	3.7%	.0%	2.1%
CPU	14.4	4.8	9.6	343	2.0%	1.2%	4.5%	1.0%
GDS	14.2	6.5	6.2	188	1.9%	1.6%	2.9%	.5%
Computervision	12.1	2.5	6.2	115	1.6%	.6%	2.9%	.3%
Mutoh Industries—No OEM	11.3	5.9	3.9	227	1.5%	1.5%	1.8%	.7%
Andor	10.0	2.2	7.4	182	1.4%	.5%	3.4%	.5%
Century Research Center	9.9	5.2	3.7	69	1.3%	1.3%	1.7%	.2%
Hitachi Zosen Info Systems	9.1	7.7	.4	81	1.2%	1.9%	.2%	.2%
INS Engineering	7.5	3.7	3.8	34	1.0%	.9%	1.8%	.1%
Apple Computer	5.7	5.7	.0	1,191	.8%	1.4%	.0%	3.4%

(Continued)

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Table 46 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Uchida Yoko	5.2	3.1	1.9	145	.7%	.8%	.9%	.4%
Digital	5.1	4.3	.0	599	.7%	1.1%	.0%	1.7%
Toyo Information Systems-No OEM	4.6	2.7	1.4	51	.6%	.7%	.7%	.1%
Sun Microsystems	4.5	3.6	.0	170	.6%	.9%	.0%	.5%
Aspen Technology	4.3	.0	2.8	0	.6%	.0%	1.3%	.0%
Silicon Graphics	3.5	3.5	.0	102	.5%	.9%	.0%	.3%
Kockums Computer Systems	3.0	.8	1.9	140	.4%	.2%	.9%	.4%
Adam Net	2.9	.4	1.8	6	.4%	.1%	.8%	.0%
IEZ	2.9	1.0	1.5	69	.4%	.2%	.7%	.2%
CAD Centre	2.5	.0	1.8	0	.3%	.0%	.8%	.0%
Design Automation	2.3	.5	1.8	80	.3%	.1%	.8%	.2%
Mitsui Engineering	1.9	1.3	.4	15	.3%	.3%	.2%	.0%
EA Systems	1.5	.0	.6	0	.2%	.0%	.3%	.0%
Other Companies	51.7	45.5	4.9	12,607	7.1%	11.2%	2.3%	36.4%
All Companies	734.0	404.4	215.5	34,588	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	218.5	123.4	67.8	18,678	29.8%	30.5%	31.5%	54.0%
All Asian-Based Companies	505.7	279.1	141.7	15,684	68.9%	69.0%	65.8%	45.3%
All European-Based Companies	9.9	1.9	6.0	226	1.3%	.5%	2.8%	.7%
All Hardware Companies	140.2	135.8	.0	22,032	19.1%	33.6%	.0%	63.7%
All Turnkey & SW Companies	593.9	268.6	215.5	12,556	80.9%	66.4%	100.0%	36.3%

Source: Dataquest (July 1994)

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Table 47
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Technical Workstation
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Fujitsu	74.4	39.8	24.7	1,686	18.9%	18.1%	22.6%	25.1%
Technodia	36.1	28.9	.4	405	9.2%	13.1%	.3%	6.0%
Nihon Unisys	35.9	19.8	9.7	145	9.1%	9.0%	8.9%	2.2%
NEC	29.7	18.4	8.6	836	7.5%	8.4%	7.9%	12.4%
Intergraph	21.8	9.5	5.4	327	5.5%	4.3%	4.9%	4.9%
Toshiba—No OEM	15.5	7.8	6.2	172	4.0%	3.5%	5.7%	2.6%
Sony	14.9	14.9	.0	737	3.8%	6.7%	.0%	11.0%
Hewlett-Packard	14.4	12.2	.0	499	3.7%	5.6%	.0%	7.4%
GDS	14.2	6.5	6.2	188	3.6%	3.0%	5.7%	2.8%
Hitachi	13.9	6.5	6.0	275	3.5%	3.0%	5.5%	4.1%
Mitsubishi Electric	13.5	11.5	1.0	127	3.4%	5.2%	.9%	1.9%
Kozo Keikaku Engineering	12.6	1.3	3.8	13	3.2%	.6%	3.5%	.2%
Computervision	11.9	2.5	5.9	115	3.0%	1.1%	5.4%	1.7%
IBM	10.8	4.9	3.5	122	2.7%	2.2%	3.2%	1.8%
Century Research Center	9.9	5.2	3.7	69	2.5%	2.3%	3.4%	1.0%
Hitachi Zosen Info Systems	8.1	6.8	.4	81	2.1%	3.1%	.4%	1.2%
Mutoh Industries—No OEM	7.9	3.4	3.0	108	2.0%	1.5%	2.7%	1.6%
INS Engineering	6.8	3.4	3.5	19	1.7%	1.5%	3.2%	.3%
Uchida Yoko	4.7	2.8	1.7	118	1.2%	1.3%	1.6%	1.8%
Toyo Information Systems-No OEM	4.0	2.4	1.3	48	1.0%	1.1%	1.2%	.7%
Sun Microsystems	4.0	3.2	.0	162	1.0%	1.4%	.0%	2.4%

(Continued)

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Table 47 (Continued)
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Technical Workstation
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Silicon Graphics	3.5	3.5	.0	102	.9%	1.6%	.0%	1.5%
Aspen Technology	3.2	.0	2.1	0	.8%	.0%	1.9%	.0%
Kockums Computer Systems	3.0	.8	1.9	140	.8%	.4%	1.7%	2.1%
Adam Net	2.9	.4	1.8	6	.7%	.2%	1.7%	.1%
IEZ	2.9	1.0	1.5	69	.7%	.4%	1.4%	1.0%
CAD Centre	2.5	.0	1.8	0	.6%	.0%	1.6%	.0%
Autodesk	2.4	.0	2.4	0	.6%	.0%	2.1%	.0%
Mitsui Engineering	1.7	1.2	.4	12	.4%	.5%	.3%	.2%
Other Companies	6.1	2.0	2.8	144	1.5%	.9%	2.5%	2.1%
All Companies	393.1	220.4	109.4	6,728	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	90.2	43.5	27.5	1,577	22.9%	19.7%	25.2%	23.4%
All Asian-Based Companies	293.3	175.0	76.0	4,935	74.6%	79.4%	69.5%	73.4%
All European-Based Companies	9.6	1.9	5.8	216	2.5%	.9%	5.3%	3.2%
All Hardware Companies	50.8	47.7	.0	2,055	12.9%	21.6%	.0%	30.5%
All Turnkey & SW Companies	342.3	172.7	109.4	4,673	87.1%	78.4%	100.0%	69.5%

Source: Dataquest (July 1994)

CAEC-WW-MS-9403

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Table 48
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Host-Dependent
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Fujitsu	47.3	21.7	18.9	713	47.1%	44.9%	66.4%	46.8%
IBM	15.2	8.7	3.1	196	15.2%	17.9%	10.7%	12.8%
Nihon Unisys	12.0	7.4	1.9	61	11.9%	15.4%	6.7%	4.0%
Kozo Keikaku Engineering	10.1	.0	2.0	0	10.0%	.0%	7.1%	.0%
Mitsubishi Electric	2.3	1.1	.6	6	2.3%	2.2%	2.2%	.4%
Digital	1.9	1.4	.0	0	1.8%	3.0%	.0%	.0%
Hitachi	1.3	.6	.6	312	1.3%	1.3%	1.9%	20.5%
EA Systems	1.1	.0	.5	0	1.1%	.0%	1.6%	.0%
Aspen Technology	1.1	.0	.7	0	1.1%	.0%	2.4%	.0%
Hitachi Zosen Info Systems	1.0	.9	.0	0	1.0%	1.9%	.0%	.0%
Other Companies	7.2	6.5	.3	236	7.2%	13.5%	.9%	15.5%
All Companies	100.3	48.4	28.5	1,523	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	25.9	16.3	4.3	428	25.8%	33.7%	15.0%	28.1%
All Asian-Based Companies	74.4	32.1	24.2	1,094	74.2%	66.3%	85.0%	71.9%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	8.4	7.7	.0	229	8.4%	15.8%	.0%	15.0%
All Turnkey & SW Companies	91.9	40.7	28.5	1,294	91.6%	84.2%	100.0%	85.0%

Source: Dataquest (July 1994)

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Table 49
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Server
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
IBM	5.7	3.0	1.4	46	55.1%	69.5%	63.6%	56.7%
Kozo Keikaku Engineering	2.5	.0	.5	0	24.3%	.0%	22.2%	.0%
Intergraph	1.0	.4	.3	12	9.7%	9.4%	13.8%	14.4%
Other Companies	1.1	.9	.0	23	10.9%	21.1%	.4%	28.9%
All Companies	10.4	4.4	2.3	81	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	7.8	4.3	1.8	74	75.0%	98.2%	77.8%	91.6%
All Asian-Based Companies	2.6	.1	.5	7	25.0%	1.8%	22.2%	8.4%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	1.1	.9	.0	23	10.8%	21.1%	.0%	28.2%
All Turnkey & SW Companies	9.3	3.4	2.3	58	89.2%	78.9%	100.0%	71.8%

Source: Dataquest (July 1994)

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Table 50
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Personal Computer
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
NEC	34.8	24.7	7.0	4,490	15.1%	18.8%	9.2%	17.1%
Fujitsu	30.2	26.6	3.7	3,584	13.1%	20.2%	4.9%	13.6%
Autodesk	25.2	.0	25.2	0	10.9%	.0%	33.4%	.0%
Kozo Keikaku Engineering	25.2	1.0	6.5	80	10.9%	.8%	8.7%	.3%
IBM	18.0	12.3	5.4	2,268	7.8%	9.3%	7.2%	8.6%
CPU	14.4	4.8	9.6	343	6.2%	3.6%	12.8%	1.3%
Andor	10.0	2.2	7.4	182	4.3%	1.7%	9.8%	.7%
Apple Computer	5.7	5.7	.0	1,191	2.5%	4.3%	.0%	4.5%
Technodia	4.9	4.4	.1	128	2.1%	3.3%	.1%	.5%
Toshiba—No OEM	3.9	1.9	1.6	291	1.7%	1.5%	2.1%	1.1%
Mutoh Industries—No OEM	3.4	2.5	.9	120	1.5%	1.9%	1.2%	.5%
Hitachi	3.2	1.5	1.4	162	1.4%	1.1%	1.8%	.6%
Intergraph	2.5	.8	1.3	106	1.1%	.6%	1.7%	.4%
Design Automation	2.3	.5	1.8	80	1.0%	.4%	2.3%	.3%
Digital	2.3	2.2	.0	574	1.0%	1.6%	.0%	2.2%
Mitsubishi Electric	1.8	1.2	.6	145	.8%	.9%	.8%	.6%
Other Companies	42.5	39.2	3.1	12,512	18.5%	29.9%	4.1%	47.7%
All Companies	230.3	131.3	75.4	26,257	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	94.7	59.3	34.3	16,599	41.1%	45.2%	45.4%	63.2%
All Asian-Based Companies	135.4	72.0	41.0	9,648	58.8%	54.8%	54.4%	36.7%
All European-Based Companies	.2	.0	.1	10	.1%	.0%	.2%	.0%
All Hardware Companies	79.8	79.6	.0	19,725	34.6%	60.6%	.0%	75.1%
All Turnkey & SW Companies	150.5	51.7	75.4	6,531	65.4%	39.4%	100.0%	24.9%

Source: Dataquest (July 1994)

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Table 51
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: All Platforms
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Intergraph	7.2	3.0	2.0	177	16.0%	12.2%	12.9%	2.8%
IBM	7.2	5.7	.7	754	15.9%	23.0%	4.6%	12.1%
Autodesk	6.9	.0	6.9	0	15.2%	.0%	45.1%	.0%
Apple Computer	4.9	4.9	.0	1,293	10.8%	19.8%	.0%	20.7%
International Software Systems	2.8	.0	2.8	0	6.1%	.0%	18.1%	.0%
Computervision	2.7	1.0	.4	44	5.9%	4.1%	2.6%	.7%
Hewlett-Packard	1.4	1.3	.0	372	3.1%	5.1%	.0%	6.0%
Digital	1.1	.9	.0	194	2.3%	3.6%	.0%	3.1%
Other Companies	11.1	8.1	2.5	3,405	24.6%	32.4%	16.7%	54.6%
All Companies	45.3	24.9	15.3	6,238	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	44.2	24.8	14.6	6,229	97.6%	99.5%	95.6%	99.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.1	.1	.7	9	2.4%	.5%	4.4%	.1%
All Hardware Companies	19.4	18.8	.0	5,928	42.8%	75.4%	.0%	95.0%
All Turnkey & SW Companies	25.9	6.1	15.3	310	57.2%	24.6%	100.0%	5.0%

Source: Dataquest (July 1994)

CAEC-WW-MS-9403

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Table 52
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Technical Workstation
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	6.2	2.7	1.5	130	41.8%	35.3%	46.1%	37.0%
IBM	3.5	2.9	.3	111	23.6%	37.1%	8.4%	31.6%
Computervision	2.2	.9	.3	39	15.0%	11.8%	8.1%	11.1%
Other Companies	2.9	1.2	1.2	71	19.6%	15.8%	37.3%	20.2%
All Companies	14.9	7.7	3.3	350	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	14.5	7.6	3.1	345	97.0%	99.1%	94.6%	98.6%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.4	.1	.2	5	3.0%	.9%	5.4%	1.4%
All Hardware Companies	3.4	3.0	.0	132	22.6%	39.3%	.0%	37.7%
All Turnkey & SW Companies	11.5	4.7	3.3	218	77.4%	60.7%	100.0%	62.3%

Source: Dataquest (July 1994)

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Table 53
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Host-Dependent
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
IBM	1.2	.7	.2	24	63.2%	53.8%	92.3%	60.1%
Digital	.4	.3	.0	0	18.7%	21.5%	.0%	.0%
Other Companies	.4	.3	.0	16	18.1%	24.6%	7.7%	39.9%
All Companies	1.9	1.3	.3	39	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	1.9	1.3	.3	39	100.0%	100.0%	100.0%	99.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.1%
All Hardware Companies	.7	.6	.0	12	35.8%	46.2%	.0%	30.0%
All Turnkey & SW Companies	1.2	.7	.3	27	64.2%	53.8%	100.0%	70.0%

Source: Dataquest (July 1994)

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Table 54
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Server
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
IBM	.6	.3	.1	7	39.9%	50.0%	35.5%	37.9%
Computervision	.4	.1	.1	5	29.0%	16.7%	32.3%	23.4%
Other Companies	.4	.2	.1	8	31.2%	33.3%	32.3%	38.8%
All Companies	1.4	.7	.3	20	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	1.4	.7	.3	20	100.0%	100.0%	100.0%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	.2	.2	.0	4	15.9%	27.3%	.0%	22.2%
All Turnkey & SW Companies	1.2	.5	.3	15	84.1%	72.7%	100.0%	77.8%

Source: Dataquest (July 1994)

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Table 55
1993 CAD/CAM/CAE/GIS Market Share Update

Application: AEC
Platform: Personal Computer
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Autodesk	6.6	.0	6.6	0	24.2%	.0%	57.5%	.0%
Apple Computer	4.9	4.9	.0	1,293	18.1%	32.2%	.0%	22.2%
International Software Systems	2.8	.0	2.8	0	10.2%	.0%	24.3%	.0%
IBM	1.9	1.8	.1	612	7.1%	12.0%	.7%	10.5%
Hewlett-Packard	1.0	.9	.0	354	3.8%	6.1%	.0%	6.1%
Other Companies	9.9	7.6	2.0	3,570	36.5%	49.6%	17.5%	61.2%
All Companies	27.1	15.3	11.4	5,829	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	26.4	15.2	10.9	5,825	97.6%	99.7%	95.7%	99.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.7	.1	.5	4	2.4%	.3%	4.3%	.1%
All Hardware Companies	15.1	15.0	.0	5,780	55.8%	98.2%	.0%	99.2%
All Turnkey & SW Companies	12.0	.3	11.4	49	44.2%	1.8%	100.0%	.8%

Source: Dataquest (July 1994)

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Market Statistics

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Note: All tables show estimated data.

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Note: All tables show estimated data.

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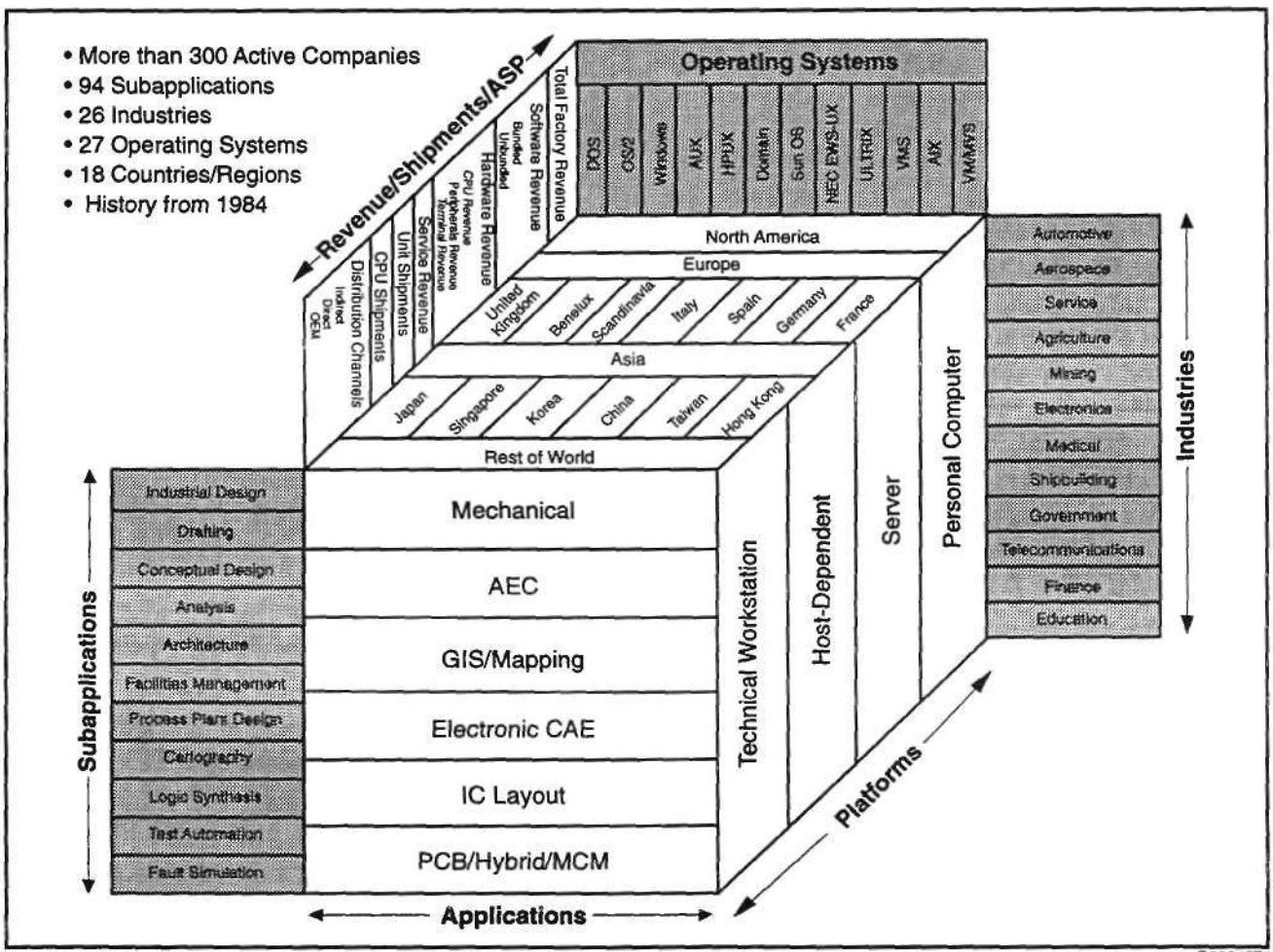
CAD/CAM/CAE and GIS
GIS and AEC Market Share—1993

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.

Figure 1
CAD/CAM/CAE/GIS Market Database



Source: Dataquest (February 1994)

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Table 1
CAD/CAM/CAE/GIS 1992-1993 Market Summary

	Software Revenue 1992 ($M)	Software Revenue 1993 ($M)	Growth Rate (%)	Total Revenue 1992 ($M)	Total Revenue 1993 ($M)	Growth Rate (%)	Hardware Unit Shipments 1992	Hardware Unit Shipments 1993	Growth Rate (%)
Application									
Mechanical	2,235.1	2,391.6	7.0	8,079.0	8,126.7	0.6	312,647	341,620	9.3
AEC	754.4	828.5	9.8	2,385.7	2,399.1	0.6	167,517	187,728	12.1
GIS/Mapping	587.1	653.8	11.4	2,018.3	2,124.8	5.3	87,918	104,504	18.9
Electronic CAE	740.7	787.7	6.3	2,135.7	2,295.7	7.5	96,797	102,196	5.6
IC Layout	228.6	234.6	2.6	640.6	686.5	7.2	14,580	17,368	19.1
PCB/Hybrid/MCM	290.9	290.2	-0.3	915.9	933.2	1.9	35,858	36,999	3.2
Total	4,836.7	5,186.3	7.2	16,175.2	16,565.8	2.4	715,317	790,415	10.5
Region									
North America	1,629.3	1,804.5	10.8	5,262.4	5,538.4	5.2	295,649	337,773	14.2
Europe	1,709.9	1,755.9	2.7	5,959.5	5,851.8	-1.8	238,241	261,348	9.7
Asia	1,375.1	1,500.0	9.1	4,575.7	4,799.7	4.9	160,991	168,811	4.9
Rest of World	122.5	125.9	2.8	377.7	375.9	-0.5	20,436	22,483	10.0
Total	4,836.7	5,186.3	7.2	16,175.2	16,565.8	2.4	715,317	790,415	10.5
In Local Currency									
Europe (ECU)	1,314.3	1,504.0	14.4	4,580.6	5,012.5	9.4			
Asia (Yen)	173,879	166,799	-4.1	578,591	533,729	-7.8			
Platform									
Technical Workstation	3,100.5	3,358.5	8.3	9,838.5	10,472.6	6.4	195,523	221,887	13.5
Host-Dependent	353.8	320.5	-9.4	2,324.6	1,925.0	-17.2	29,886	32,548	8.9
Server	190.6	210.8	10.6	1,040.4	1,070.6	2.9	15,030	17,482	16.3
Personal Computer	1,191.8	1,296.6	8.8	2,971.8	3,097.7	4.2	474,879	518,498	9.2
Total	4,836.7	5,186.3	7.2	16,175.2	16,565.8	2.4	715,317	790,415	10.5

Source: Dataquest (February 1994)

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A companion article analyzing major shifts in the 1993 market was published in our *Dataquest Alert,* dated January 31, 1994.

Table 1 summarizes the performance in various segments of the CAD/CAM/CAE/GIS markets in 1993 versus 1992. With the devaluation of the dollar against the yen (¥126.45/$ in 1992 versus ¥111.20/$ in 1993) and the appreciation of the dollar against the ECU (ECU 0.770/$ in 1992 versus ECU 0.858/$ in 1993) actual growth is not as it appears when denominated in U.S. dollars. With 75 percent of the Asian market in Japan, denominating in yen gives a rough indication of real growth in the Asian market, which was a negative 7.8 percent.

About This Document

This document contains Dataquest's detailed market share information on the CAD/CAM/CAE/GIS industry. Following is a description of the companies included in the *Market Share* books:

- 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
- Electronic design automation applications—All companies in database with EDA (electronic CAE, IC layout, PCB/hybrid/MCM) revenue
- Europe Overview—All Europe-based companies and all other companies with more than $1 million in European revenue
- Asia—All Asia-based companies and all other companies with more than $1 million in Asian revenue
- PC CAD—All companies in database with personal computer revenue

We no longer publish top-level market statistics for the entire CAD/CAM/CAE/GIS industry or companies whose revenue in any segment is less than $1 million. This data is available by calling Kathy Klotz at (408) 437-8243. 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 from February 1 through April 30 to verify and cross-tab and refine, producing our market share update by May 31.

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.

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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), compilers, and module development tools.

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- 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.

Asia

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

Rest of World

Rest of World includes all other countries including Australia, New Zealand, Oceania, 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.

Server

A server is a computer that transparently provides its resources for use by other computer systems. It is a system on a network that provides specific functionality to other computer systems: the clients. Functions include file storage, database access, and compute capability. Dataquest tracks the following major categories of servers used for CAD/CAM/CAE and GIS applications:

- Compute Servers—These systems provide capabilities for solving numerical problems (for example, simulations, statistical calculations, and simultaneous partial differential equations). System features usually include high-speed computational capabilities (for example, vector and parallel processing) and large memories.
- Print Servers—These systems provide access to printers, specialized printing applications software, and print-spooling resources to a network.

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- File Servers—These systems provide mass storage capability to clients on a network. Services can range from temporary storage of working files to long-term backup and archive systems.
- Database Servers—These systems manage databases as a shared resource to a network. These servers handle such functions as physical data storage, data security, and high-level queries and can access stored information at the record level.

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 bundled (part of a turnkey system) and unbundled application software.
- 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.

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- 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

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- 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 share data are available January 31. All tables will be published and distributed to clients by March 31.
- Forecasting from the market share tables provides a five-year forecast period, available after March 31. The books will be shipped by May 31.
- Final updated market share tables, based on additional data collection and analysis, will be completed by May 31. 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 these 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.

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Database Changes

Tables 2 through 5 show changes made to the database since last year's market share update. PC clone manufacturers are no longer tracked individually. We continue to show PC sales by IBM, Hewlett-Packard, and Digital, which also sell other platforms. The 1993 sale of GeoVision Systems to SHL Systemhouse, Computervision-GIS to Unisys, and Logic Modeling Corporation to Synopsys will be recognized in market reporting beginning in 1994.

Table 2
Companies Renamed

Company Name	Renamed to:
Alper Systems	Sysdeco Ltd.
Areon	Kreon
CADAM	Altium
Catalpa	Catalpa groupe Missler
Geotrace Technologies	Cadlynx
Logic Control	Logic Systems Designers
RIB/RZB	RIB Bausoftware
Sener Sistemas Marinos	Sener Inginiera y Sistemas
STI Strassle	Strassle Informationssysteme

Source: Dataquest (February 1994)

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

Company Name	Acquired by, Merged with, Technology Sold to:
Aries Technology	MacNeal Schwendler
ASG	Softdesk
CAD Language Systems	Compass Design Automation
CAD/CAM Group	Data I/O
Comdisco	Cadence
DAT Standard info ssystemes	ISD Software
EEsof	Hewlett-Packard
Expertest	Sunrise Test
Fides Industrielle Automation	Strassle
HP Cade	Hewlett-Packard
Inca	Zycad
Infocel	Understanding Systems
PiE Design	Quickturn Design Systems
Quad Design Technology	Viewlogic
Wisdom Systems	ICAD

Source: Dataquest (February 1994)

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Table 4
Companies Deleted

Company Removed from Database:
European
Club Informatico SA
DATAID Technologies
DECISA
Micrograph
Olivetti*
North American
Bechtel
Compaq*
Dell Computer*
Engineering Systems Corporation
GeoQuest
Mega CADD
Object Design
Objectivity
Ontos
The CAD Group
Ultimap

*We no longer follow individual PC clone makers.
Source: Dataquest (February 1994)

Table 5
Companies Added

Company Added to Database:
European
APIC Systemes
ISD Software
North American
Aptix
Earth Resource Mapping
Graftek
Graphic Data Systems (GDS)
Systems Science, Inc.
Tactics Int'l Ltd.
VLSI Libraries
Asian
Adam Net
Kozo
Okura
Tachnodia
TECHSPERT
Toshiba Engineering
Yokogawa Digital Computer

Source: Dataquest (February 1994)

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Table 6
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	388.2	164.9	106.5	9,069	18.3%	15.6%	16.3%	8.7%
ESRI	138.0	.0	110.4	0	6.5%	.0%	16.9%	.0%
Siemens Nixdorf Info systeme	135.6	45.8	51.8	2,214	6.4%	4.3%	7.9%	2.1%
Digital	133.1	105.4	.1	5,838	6.3%	10.0%	.0%	5.6%
IBM	125.2	104.8	7.6	12,032	5.9%	9.9%	1.2%	11.5%
Landmark Graphics	108.1	48.7	23.8	536	5.1%	4.6%	3.6%	.5%
Sun Microsystems	104.7	85.2	.0	4,247	4.9%	8.1%	.0%	4.1%
Hewlett-Packard	87.2	74.7	.0	7,015	4.1%	7.1%	.0%	6.7%
GDS	61.8	28.5	27.0	1,232	2.9%	2.7%	4.1%	1.2%
Fujitsu	57.7	29.7	20.2	1,172	2.7%	2.8%	3.1%	1.1%
Mitsubishi Electric	49.1	38.4	6.1	777	2.3%	3.6%	.9%	.7%
Autodesk	47.8	.0	47.8	0	2.3%	.0%	7.3%	.0%
Silicon Graphics	39.8	35.6	.0	1,524	1.9%	3.4%	.0%	1.5%
Data General	38.5	30.9	1.4	2,186	1.8%	2.9%	.2%	2.1%
ICL	26.0	15.2	9.0	749	1.2%	1.4%	1.4%	.7%
Uchida Yoko	22.5	13.3	8.2	624	1.1%	1.3%	1.3%	.6%
Autometric	22.0	6.0	3.0	255	1.0%	.6%	.5%	.2%
Genasys II	21.5	2.1	15.1	96	1.0%	.2%	2.3%	.1%
Hitachi	18.9	8.9	8.1	726	.9%	.8%	1.2%	.7%
Apple Computer	18.6	18.6	.0	4,847	.9%	1.8%	.0%	4.6%
Smallworld Systems	18.5	4.3	10.2	411	.9%	.4%	1.6%	.4%
MapInfo	17.8	.0	15.3	0	.8%	.0%	2.3%	.0%

(Continued)

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Table 6 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Toshiba—NO OEM	16.2	8.1	6.5	180	.8%	.8%	1.0%	.2%
Mitsui Engineering	14.7	10.2	3.0	120	.7%	1.0%	.5%	.1%
Strategic Mapping	14.3	.0	12.9	0	.7%	.0%	2.0%	.0%
GeoVision Systems	13.5	1.0	7.3	26	.6%	.1%	1.1%	.0%
Laser-Scan	12.7	4.0	5.6	78	.6%	.4%	.9%	.1%
Computervision	12.4	3.0	3.8	155	.6%	.3%	.6%	.1%
ETAK	11.4	.5	10.8	23	.5%	.0%	1.7%	.0%
Understanding Systems	11.2	1.3	8.7	225	.5%	.1%	1.3%	.2%
Graftek	11.1	4.1	3.9	205	.5%	.4%	.6%	.2%
Synercom	11.0	.0	4.4	0	.5%	.0%	.7%	.0%
Unisys	10.2	2.8	3.4	258	.5%	.3%	.5%	.2%
ERDAS	9.6	2.2	6.7	170	.5%	.2%	1.0%	.2%
Straessle Informationssysteme	9.5	1.3	6.0	139	.4%	.1%	.9%	.1%
Sysscan	9.3	3.7	2.7	96	.4%	.3%	.4%	.1%
Enghouse Systems Ltd.	8.8	.3	7.6	15	.4%	.0%	1.2%	.0%
NEC	8.1	5.1	2.3	308	.4%	.5%	.3%	.3%
INS Engineering	7.9	3.9	4.0	22	.4%	.4%	.6%	.0%
PCI Remote Sensing Corp	7.3	.0	7.3	0	.3%	.0%	1.1%	.0%
Radian Corporation	7.1	.0	4.7	0	.3%	.0%	.7%	.0%
Sysdeco Ltd.	6.9	3.4	1.7	60	.3%	.3%	.3%	.1%
Kohns & Poppenhaeger	6.6	3.0	2.6	76	.3%	.3%	.4%	.1%
APIC Systemes	6.3	.0	4.2	0	.3%	.0%	.6%	.0%

(Continued)

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Table 6 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Control Data Systems	6.1	3.4	1.6	157	.3%	.3%	.2%	.2%
Dynamic Graphics	5.6	.0	3.6	0	.3%	.0%	.5%	.0%
Star Informatic	5.4	1.3	3.3	215	.3%	.1%	.5%	.2%
Spectrum Graphics	5.4	1.6	2.7	52	.3%	.1%	.4%	.0%
Clemessy	5.0	4.0	.7	15	.2%	.4%	.1%	.0%
Century Research Center	4.7	2.5	1.8	33	.2%	.2%	.3%	.0%
GeoGraphix	4.3	.0	3.2	0	.2%	.0%	.5%	.0%
CADIX	4.2	1.8	2.0	23	.2%	.2%	.3%	.0%
Intera Tydac	3.8	.0	3.8	0	.2%	.0%	.6%	.0%
Ground Modelling Systems	3.5	1.6	1.5	291	.2%	.1%	.2%	.3%
Tactics Int'l	3.5	.0	3.5	0	.2%	.0%	.5%	.0%
Terr-Mar Resource Info Svs	3.0	.5	1.9	46	.1%	.0%	.3%	.0%
Auto-Trol	3.0	1.1	1.2	37	.1%	.1%	.2%	.0%
Mutoh Industries—NO OEM	2.8	1.0	1.6	61	.1%	.1%	.2%	.1%
Terra Sciences	2.8	.0	2.8	0	.1%	.0%	.4%	.0%
PAFEC	2.7	.9	1.3	38	.1%	.1%	.2%	.0%
Geometria GIS Systems House	2.6	.3	.1	26	.1%	.0%	.0%	.0%
Facility Mapping Systems	2.3	.0	2.1	0	.1%	.0%	.3%	.0%
Earth Resource Mapping	2.1	.0	1.8	0	.1%	.0%	.3%	.0%
Softdesk	2.1	.0	2.1	0	.1%	.0%	.3%	.0%
RIB/Bausoftware	2.0	.2	1.6	22	.1%	.0%	.2%	.0%

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Table 6 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Ziegler Informatics	2.0	.0	2.0	0	.1%	.0%	.3%	.0%
Generation 5 Technology	1.9	.0	1.9	0	.1%	.0%	.3%	.0%
Andor	1.7	.4	1.3	31	.1%	.0%	.2%	.0%
ACDS Graphic System	1.7	.0	1.4	0	.1%	.0%	.2%	.0%
Kork Systems	1.4	.2	.9	17	.1%	.0%	.1%	.0%
Contract Data Research	1.3	.0	.4	0	.1%	.0%	.1%	.0%
LandCADD Int'l.	1.2	.0	1.1	0	.1%	.0%	.2%	.0%
EME	1.2	.3	.5	45	.1%	.0%	.1%	.0%
Maptech	1.2	.0	1.2	0	.1%	.0%	.2%	.0%
DAPCO	1.1	.0	.8	0	.1%	.0%	.1%	.0%
PacSoft	1.1	.0	1.1	0	.1%	.0%	.2%	.0%
Research Machines	1.1	1.1	.0	397	.1%	.1%	.0%	.4%
Other Companies	124.9	117.6	5.3	45,293	5.9%	11.1%	.8%	43.3%
All Companies	2,124.8	1,058.3	653.8	104,504	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	1,643.8	841.9	474.2	95,410	77.4%	79.6%	72.5%	91.3%
All Asian-Based Companies	208.3	123.0	65.0	4,077	9.8%	11.6%	9.9%	3.9%
All European-Based Companies	272.6	93.4	114.6	5,017	12.8%	8.8%	17.5%	4.8%
All Hardware Companies	635.9	558.2	2.0	82,950	29.9%	52.7%	.3%	79.4%
All Turnkey & SW Companies	1,488.8	500.1	651.9	21,555	70.1%	47.3%	99.7%	20.6%

Source: Dataquest (February 1994)

Table 7
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Intergraph	325.4	145.6	76.9	5,689	24.2%	22.4%	19.6%	20.9%
Siemens Nixdorf Info systeme	128.9	42.8	49.9	2,109	9.6%	6.6%	12.7%	7.7%
Hewlett-Packard	72.9	61.9	.0	2,814	5.4%	9.5%	.0%	10.3%
ESRI	71.7	.0	55.2	0	5.3%	.0%	14.1%	.0%
IBM	66.7	57.9	2.5	2,819	5.0%	8.9%	.6%	10.3%
Landmark Graphics	65.1	29.3	14.3	323	4.8%	4.5%	3.6%	1.2%
GDS	61.8	28.5	27.0	1,232	4.6%	4.4%	6.9%	4.5%
Digital	41.9	32.4	.1	1,517	3.1%	5.0%	.0%	5.6%
Sun Microsystems	40.2	31.7	.0	2,112	3.0%	4.9%	.0%	7.7%
Fujitsu	39.0	21.1	12.8	890	2.9%	3.2%	3.2%	3.3%
Mitsubishi Electric	37.8	32.1	2.7	354	2.8%	4.9%	.7%	1.3%
Silicon Graphics	35.8	32.2	.0	1,448	2.7%	5.0%	.0%	5.3%
Data General	28.5	22.5	1.4	1,646	2.1%	3.5%	.4%	6.0%
ICL	26.0	15.2	9.0	749	1.9%	2.3%	2.3%	2.7%
Uchida Yoko	20.3	12.0	7.3	508	1.5%	1.8%	1.9%	1.9%
Genasys II	19.3	1.9	13.5	45	1.4%	.3%	3.4%	.2%
Smallworld Systems	18.5	4.3	10.2	411	1.4%	.7%	2.6%	1.5%
Toshiba—NO OEM	16.2	8.1	6.5	180	1.2%	1.2%	1.6%	.7%
Hitachi	14.4	6.8	6.2	285	1.1%	1.0%	1.6%	1.0%
Mitsui Engineering	13.5	9.3	2.8	93	1.0%	1.4%	.7%	.3%
Laser-Scan	12.1	3.6	5.5	74	.9%	.6%	1.4%	.3%
Computervision	11.9	2.8	3.7	149	.9%	.4%	.9%	.5%

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Table 7 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
GeoVision Systems	11.4	.8	6.2	24	.9%	.1%	1.6%	.1%
Autometric	10.9	3.0	1.5	138	.8%	.5%	.4%	.5%
Straessle Informationssysteme	9.5	1.3	6.0	139	.7%	.2%	1.5%	.5%
Graftek	8.8	3.5	3.4	151	.7%	.5%	.9%	.6%
Synercom	8.3	.0	3.3	0	.6%	.0%	.8%	.0%
INS Engineering	7.9	3.9	4.0	22	.6%	.6%	1.0%	.1%
Unisys	7.3	1.7	2.7	166	.5%	.3%	.7%	.6%
NEC	7.3	4.5	2.1	204	.5%	.7%	.5%	.7%
ERDAS	7.2	1.7	5.0	43	.5%	.3%	1.3%	.2%
Sysdeco Ltd.	6.9	3.4	1.7	60	.5%	.5%	.4%	.2%
Kohns & Poppenhaeger	6.6	3.0	2.6	76	.5%	.5%	.7%	.3%
APIC Systemes	6.3	.0	4.2	0	.5%	.0%	1.1%	.0%
Control Data Systems	6.1	3.4	1.6	157	.5%	.5%	.4%	.6%
Star Informatic	5.4	1.3	3.3	215	.4%	.2%	.8%	.8%
Spectrum Graphics	5.4	1.6	2.7	52	.4%	.2%	.7%	.2%
Dynamic Graphics	5.3	.0	3.4	0	.4%	.0%	.9%	.0%
Sysscan	4.9	1.7	1.8	61	.4%	.3%	.5%	.2%
Century Research Center	4.7	2.5	1.8	33	.4%	.4%	.4%	.1%
Clemessy	4.5	3.6	.7	12	.3%	.6%	.2%	.0%
Radian Corporation	4.4	.0	2.7	0	.3%	.0%	.7%	.0%
CADIX	4.2	1.8	2.0	23	.3%	.3%	.5%	.1%
Autodesk	3.1	.0	3.1	0	.2%	.0%	.8%	.0%

(Continued)

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Table 7 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Auto-Trol	3.0	1.1	1.2	37	.2%	.2%	.3%	.1%
PAFEC	2.7	.9	1.3	38	.2%	.1%	.3%	.1%
Enghouse Systems Ltd.	2.2	.3	1.7	15	.2%	.0%	.4%	.1%
Earth Resource Mapping	2.1	.0	1.8	0	.2%	.0%	.5%	.0%
Intera Tydac	1.8	.0	1.8	0	.1%	.0%	.5%	.0%
MapInfo	1.8	.0	1.5	0	.1%	.0%	.4%	.0%
Terr-Mar Resource Info Svs	1.8	.3	1.1	19	.1%	.0%	.3%	.1%
Mutoh Industries—NO OEM	1.5	.5	.8	22	.1%	.1%	.2%	.1%
ACDS Graphic System	1.3	.0	1.1	0	.1%	.0%	.3%	.0%
Understanding Systems	1.3	.2	1.0	11	.1%	.0%	.3%	.0%
ETAK	1.2	.0	1.1	1	.1%	.0%	.3%	.0%
DAPCO	1.1	.0	.8	0	.1%	.0%	.2%	.0%
Other Companies	7.7	1.9	4.5	84	.6%	.3%	1.2%	.3%
All Companies	1,343.5	649.8	393.0	27,254	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	934.4	463.4	242.9	20,603	69.5%	71.3%	61.8%	75.6%
All Asian-Based Companies	166.6	102.6	48.9	2,615	12.4%	15.8%	12.4%	9.6%
All European-Based Companies	242.5	83.9	101.2	4,036	18.0%	12.9%	25.7%	14.8%
All Hardware Companies	286.0	242.2	2.0	12,509	21.3%	37.3%	.5%	45.9%
All Turnkey & SW Companies	1,057.5	407.6	391.0	14,745	78.7%	62.7%	99.5%	54.1%

Source: Dataquest (February 1994)

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Table 8
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Host-Dependent
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Digital	27.9	21.6	.0	0	24.2%	31.1%	.1%	.0%
IBM	20.5	12.8	3.1	273	17.8%	18.4%	15.7%	16.0%
Fujitsu	18.7	8.6	7.5	282	16.3%	12.4%	37.8%	16.6%
Autometric	8.4	2.3	1.1	89	7.3%	3.3%	5.8%	5.2%
Siemens Nixdorf Info systeme	6.8	3.0	1.9	106	5.9%	4.3%	9.3%	6.2%
Mitsubishi Electric	6.4	3.0	1.8	18	5.5%	4.3%	9.0%	1.0%
Synercom	2.8	.0	1.1	0	2.4%	.0%	5.6%	.0%
GeoVision Systems	2.1	.2	1.1	2	1.8%	.2%	5.7%	.1%
Hitachi	1.1	.5	.5	271	1.0%	.7%	2.4%	15.9%
Other Companies	20.6	17.5	1.7	661	17.9%	25.2%	8.5%	38.9%
All Companies	115.2	69.5	19.8	1,701	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	81.1	53.6	8.0	1,018	70.4%	77.1%	40.5%	59.9%
All Asian-Based Companies	26.2	12.1	9.8	571	22.8%	17.4%	49.3%	33.5%
All European-Based Companies	7.9	3.8	2.0	112	6.9%	5.5%	10.2%	6.6%
All Hardware Companies	45.0	37.9	.0	597	39.0%	54.5%	.0%	35.1%
All Turnkey & SW Companies	70.3	31.7	19.8	1,105	61.0%	45.5%	100.0%	64.9%

Source: Dataquest (February 1994)

CAEC-WW-MS-9401

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Table 9
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Server
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Sun Microsystems	64.5	53.5	.0	2,135	22.9%	36.2%	.0%	45.0%
Digital	50.9	39.5	.0	841	18.1%	26.7%	.0%	17.7%
ESRI	43.0	.0	33.1	0	15.3%	.0%	52.5%	.0%
Landmark Graphics	43.0	19.4	9.5	213	15.3%	13.1%	15.0%	4.5%
Intergraph	39.9	11.4	14.6	516	14.2%	7.7%	23.1%	10.9%
Data General	10.0	8.4	.0	540	3.6%	5.7%	.0%	11.4%
IBM	9.6	5.8	2.0	157	3.4%	3.9%	3.1%	3.3%
Sysscan	4.4	2.0	.9	34	1.6%	1.4%	1.4%	.7%
Silicon Graphics	3.9	3.3	.0	76	1.4%	2.3%	.0%	1.6%
Autometric	2.7	.7	.4	28	1.0%	.5%	.6%	.6%
Unisys	2.5	.8	.6	69	.9%	.5%	.9%	1.5%
Graftek	2.1	.6	.5	47	.7%	.4%	.8%	1.0%
Hewlett-Packard	1.9	1.6	.0	46	.7%	1.1%	.0%	1.0%
Other Companies	2.9	.7	1.6	46	1.0%	.5%	2.6%	1.0%
All Companies	281.2	147.7	63.1	4,748	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	276.9	145.7	62.2	4,714	98.4%	98.6%	98.6%	99.3%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	4.4	2.0	.9	34	1.6%	1.4%	1.4%	.7%
All Hardware Companies	133.5	108.4	.0	3,719	47.5%	73.4%	.0%	78.3%
All Turnkey & SW Companies	147.7	39.3	63.1	1,028	52.5%	26.6%	100.0%	21.7%

Source: Dataquest (February 1994)

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Table 10
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Personal Computer
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Autodesk	44.8	.0	44.8	0	11.6%	.0%	25.1%	.0%
IBM	28.3	28.3	.0	8,783	7.4%	14.8%	.0%	12.4%
ESRI	22.9	.0	21.8	0	6.0%	.0%	12.2%	.0%
Intergraph	22.9	7.9	15.0	2,863	5.9%	4.1%	8.4%	4.0%
Apple Computer	18.6	18.6	.0	4,847	4.8%	9.7%	.0%	6.8%
MapInfo	16.0	.0	13.7	0	4.2%	.0%	7.7%	.0%
Strategic Mapping	14.3	.0	12.9	0	3.7%	.0%	7.2%	.0%
Digital	12.5	11.9	.0	3,480	3.2%	6.2%	.0%	4.9%
Hewlett-Packard	12.5	11.2	.0	4,155	3.2%	5.9%	.0%	5.9%
Understanding Systems	10.0	1.2	7.7	214	2.6%	.6%	4.3%	.3%
ETAK	8.9	.4	8.5	15	2.3%	.2%	4.8%	.0%
Enghouse Systems Ltd.	6.6	.0	5.9	0	1.7%	.0%	3.3%	.0%
PCI Remote Sensing Corp	6.6	.0	6.6	0	1.7%	.0%	3.7%	.0%
Mitsubishi Electric	4.9	3.2	1.7	405	1.3%	1.7%	.9%	.6%
GeoGraphix	4.3	.0	3.2	0	1.1%	.0%	1.8%	.0%
Ground Modelling Systems	3.5	1.6	1.5	291	.9%	.8%	.9%	.4%
Tactics Int'l	3.5	.0	3.5	0	.9%	.0%	1.9%	.0%
Hitachi	3.3	1.6	1.4	170	.9%	.8%	.8%	.2%
ERDAS	2.4	.5	1.8	127	.6%	.3%	1.0%	.2%
Terra Sciences	2.3	.0	2.3	0	.6%	.0%	1.3%	.0%
Facility Mapping Systems	2.2	.0	2.0	0	.6%	.0%	1.1%	.0%

(Continued)

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Table 10 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Personal Computer
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Uchida Yoko	2.2	1.3	.9	116	.6%	.7%	.5%	.2%
Genasys II	2.2	.2	1.5	50	.6%	.1%	.8%	.1%
Ziegler Informatics	2.0	.0	2.0	0	.5%	.0%	1.1%	.0%
Radian Corporation	2.0	.0	1.6	0	.5%	.0%	.9%	.0%
Intera Tydac	2.0	.0	2.0	0	.5%	.0%	1.1%	.0%
Generation 5 Technology	1.9	.0	1.9	0	.5%	.0%	1.1%	.0%
Geometria GIS Systems House	1.8	.2	.0	21	.5%	.1%	.0%	.0%
Andor	1.7	.4	1.3	31	.4%	.2%	.7%	.0%
Softdesk	1.7	.0	1.7	0	.4%	.0%	.9%	.0%
RIB/Bausoftware	1.6	.2	1.2	20	.4%	.1%	.7%	.0%
Mutoh Industries—NO OEM	1.3	.5	.7	39	.3%	.2%	.4%	.1%
Contract Data Research	1.3	.0	.4	0	.3%	.0%	.2%	.0%
Kork Systems	1.3	.1	.9	7	.3%	.0%	.5%	.0%
Terr-Mar Resource Info Svs	1.3	.2	.8	27	.3%	.1%	.4%	.0%
Mitsui Engineering	1.2	.8	.3	27	.3%	.4%	.1%	.0%
EME	1.2	.3	.5	45	.3%	.2%	.3%	.1%
Maptech	1.2	.0	1.2	0	.3%	.0%	.6%	.0%
LandCADD Int'l.	1.1	.0	1.1	0	.3%	.0%	.6%	.0%
Research Machines	1.1	1.1	.0	397	.3%	.6%	.0%	.6%

(Continued)

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Table 10 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Personal Computer
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
PacSoft	1.1	.0	1.1	0	.3%	.0%	.6%	.0%
Other Companies	102.9	99.6	2.7	44,670	26.7%	52.1%	1.5%	63.1%
All Companies	384.9	191.2	177.9	70,801	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	351.5	179.2	161.0	69,076	91.3%	93.7%	90.5%	97.6%
All Asian-Based Companies	15.5	8.3	6.4	892	4.0%	4.4%	3.6%	1.3%
All European-Based Companies	17.9	3.7	10.5	833	4.6%	1.9%	5.9%	1.2%
All Hardware Companies	171.5	169.7	.0	66,125	44.6%	88.7%	.0%	93.4%
All Turnkey & SW Companies	213.3	21.5	177.9	4,676	55.4%	11.3%	100.0%	6.6%

Source: Dataquest (February 1994)

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Table 11
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	174.6	73.3	48.7	4,256	19.2%	15.6%	17.9%	6.8%
ESRI	92.8	.0	74.2	0	10.2%	.0%	27.3%	.0%
Digital	69.6	57.2	.1	3,516	7.6%	12.2%	.0%	5.6%
Sun Microsystems	68.5	55.8	.0	2,950	7.5%	11.9%	.0%	4.7%
IBM	54.6	49.2	1.6	7,779	6.0%	10.5%	.6%	12.4%
Hewlett-Packard	53.1	45.6	.0	5,201	5.8%	9.7%	.0%	8.3%
Landmark Graphics	47.6	21.4	10.5	236	5.2%	4.6%	3.8%	.4%
Data General	36.6	29.4	1.4	2,077	4.0%	6.3%	.5%	3.3%
Silicon Graphics	33.9	30.3	.0	1,241	3.7%	6.5%	.0%	2.0%
GDS	24.5	10.5	11.6	504	2.7%	2.2%	4.2%	.8%
Autometric	22.0	6.0	3.0	255	2.4%	1.3%	1.1%	.4%
Autodesk	21.7	.0	21.7	0	2.4%	.0%	8.0%	.0%
Apple Computer	16.8	16.8	.0	4,416	1.8%	3.6%	.0%	7.1%
MapInfo	14.2	.0	12.2	0	1.6%	.0%	4.5%	.0%
Strategic Mapping	10.3	.0	9.3	0	1.1%	.0%	3.4%	.0%
Understanding Systems	10.1	1.2	7.9	203	1.1%	.3%	2.9%	.3%
ETAK	8.5	.3	8.2	17	.9%	.1%	3.0%	.0%
PCI Remote Sensing Corp	7.3	.0	7.3	0	.8%	.0%	2.7%	.0%
Synercom	6.8	.0	2.8	0	.8%	.0%	1.0%	.0%
ERDAS	5.9	1.4	4.1	104	.6%	.3%	1.5%	.2%
GeoVision Systems	5.5	.4	3.0	11	.6%	.1%	1.1%	.0%

(Continued)

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Table 11 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Enghouse Systems Ltd.	5.5	.2	4.7	9	.6%	.0%	1.7%	.0%
Genasys II	5.2	.5	3.6	24	.6%	.1%	1.3%	.0%
Computervision	4.4	1.1	1.3	47	.5%	.2%	.5%	.1%
GeoGraphix	4.0	.0	3.0	0	.4%	.0%	1.1%	.0%
Intera Tydac	3.8	.0	3.8	0	.4%	.0%	1.4%	.0%
Radian Corporation	3.5	.0	2.4	0	.4%	.0%	.9%	.0%
Tactics Int'l	3.5	.0	3.5	0	.4%	.0%	1.3%	.0%
Dynamic Graphics	3.4	.0	2.2	0	.4%	.0%	.8%	.0%
Auto-Trol	3.0	1.1	1.2	37	.3%	.2%	.4%	.1%
Laser-Scan	2.5	.8	1.1	16	.3%	.2%	.4%	.0%
Terra Sciences	2.2	.0	2.2	0	.2%	.0%	.8%	.0%
Control Data Systems	2.0	1.1	.5	52	.2%	.2%	.2%	.1%
Facility Mapping Systems	2.0	.0	1.8	0	.2%	.0%	.7%	.0%
Softdesk	1.9	.0	1.9	0	.2%	.0%	.7%	.0%
Terr-Mar Resource Info Svs	1.7	.3	1.1	26	.2%	.1%	.4%	.0%
Generation 5 Technology	1.6	.0	1.6	0	.2%	.0%	.6%	.0%
Smallworld Systems	1.5	.4	.8	33	.2%	.1%	.3%	.1%
ACDS Graphic System	1.3	.0	1.1	0	.1%	.0%	.4%	.0%
Maptech	1.2	.0	1.2	0	.1%	.0%	.4%	.0%
PacSoft	1.1	.0	1.1	0	.1%	.0%	.4%	.0%

(Continued)

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Table 11 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Earth Resource Mapping	1.1	.0	.9	0	.1%	.0%	.3%	.0%
Other Companies	69.5	64.9	3.9	29,542	7.6%	13.8%	1.5%	47.2%
All Companies	910.4	469.1	272.1	62,552	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	902.4	467.6	266.5	62,451	99.1%	99.7%	97.9%	99.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	8.1	1.4	5.6	101	.9%	.3%	2.1%	.2%
All Hardware Companies	389.6	343.8	1.5	56,464	42.8%	73.3%	.6%	90.3%
All Turnkey & SW Companies	520.8	125.3	270.6	6,087	57.2%	26.7%	99.4%	9.7%

Source: Dataquest (February 1994)

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Table 12
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Technical Workstation
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	145.1	64.9	34.3	2,691	30.0%	26.4%	27.6%	22.4%
ESRI	48.2	.0	37.1	0	10.0%	.0%	29.9%	.0%
Hewlett-Packard	41.3	35.1	.0	1,735	8.5%	14.3%	.0%	14.5%
Silicon Graphics	30.8	27.7	.0	1,181	6.4%	11.3%	.0%	9.8%
IBM	28.9	26.0	.5	1,428	6.0%	10.6%	.4%	11.9%
Landmark Graphics	28.7	12.9	6.3	142	5.9%	5.3%	5.1%	1.2%
Data General	27.1	21.4	1.4	1,564	5.6%	8.7%	1.1%	13.0%
Sun Microsystems	24.7	19.5	.0	1,406	5.1%	8.0%	.0%	11.7%
GDS	24.5	10.5	11.6	504	5.1%	4.3%	9.3%	4.2%
Digital	21.8	17.6	.1	907	4.5%	7.1%	.1%	7.6%
Autometric	10.9	3.0	1.5	138	2.3%	1.2%	1.2%	1.2%
Synercom	5.1	.0	2.1	0	1.1%	.0%	1.7%	.0%
GeoVision Systems	4.7	.3	2.5	10	1.0%	.1%	2.0%	.1%
Genasys II	4.6	.5	3.3	11	1.0%	.2%	2.6%	.1%
ERDAS	4.4	1.1	3.0	26	.9%	.4%	2.4%	.2%
Computervision	3.9	.9	1.2	42	.8%	.4%	1.0%	.3%
Dynamic Graphics	3.2	.0	2.0	0	.7%	.0%	1.6%	.0%
Auto-Trol	3.0	1.1	1.2	37	.6%	.4%	1.0%	.3%
Laser-Scan	2.4	.7	1.1	15	.5%	.3%	.9%	.1%
Radian Corporation	2.2	.0	1.3	0	.5%	.0%	1.1%	.0%
Control Data Systems	2.0	1.1	.5	52	.4%	.5%	.4%	.4%

(Continued)

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Table 12 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Technical Workstation
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intera Tydac	1.8	.0	1.8	0	.4%	.0%	1.5%	.0%
Smallworld Systems	1.5	.4	.8	33	.3%	.1%	.7%	.3%
MapInfo	1.4	.0	1.2	0	.3%	.0%	1.0%	.0%
Enghouse Systems Ltd.	1.4	.2	1.0	9	.3%	.1%	.8%	.1%
Autodesk	1.3	.0	1.3	0	.3%	.0%	1.0%	.0%
Understanding Systems	1.1	.1	.9	10	.2%	.1%	.7%	.1%
Earth Resource Mapping	1.1	.0	.9	0	.2%	.0%	.7%	.0%
Terr-Mar Resource Info Svs	1.0	.2	.6	11	.2%	.1%	.5%	.1%
ACDS Graphic System	1.0	.0	.9	0	.2%	.0%	.7%	.0%
Other Companies	4.5	.6	3.7	37	.9%	.3%	3.0%	.3%
All Companies	483.6	245.6	124.2	11,989	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	479.7	244.5	122.3	11,941	99.2%	99.6%	98.5%	99.6%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	3.9	1.1	1.9	48	.8%	.4%	1.5%	.4%
All Hardware Companies	173.2	146.5	1.5	8,200	35.8%	59.6%	1.2%	68.4%
All Turnkey & SW Companies	310.5	99.1	122.7	3,789	64.2%	40.4%	98.8%	31.6%

Source: Dataquest (February 1994)

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Table 13
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Host-Dependent
Region: North America
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Digital	14.6	11.8	.0	0	41.9%	57.7%	.3%	.0%
Autometric	8.4	2.3	1.1	89	24.1%	11.2%	29.2%	30.1%
IBM	4.3	2.7	.7	59	12.4%	13.1%	16.6%	19.8%
Synercom	1.7	.0	.7	0	4.9%	.0%	17.6%	.0%
Other Companies	5.8	3.7	1.4	148	16.7%	18.0%	36.3%	50.1%
All Companies	34.8	20.5	3.9	296	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	34.7	20.4	3.9	295	99.6%	99.6%	99.5%	99.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.1	.1	.0	1	.4%	.4%	.5%	.3%
All Hardware Companies	18.2	15.3	.0	127	52.4%	74.6%	.0%	43.0%
All Turnkey & SW Companies	16.6	5.2	3.9	169	47.6%	25.4%	100.0%	57.0%

Source: Dataquest (February 1994)

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Table 14
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Server
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Sun Microsystems	43.7	36.3	.0	1,544	27.5%	42.0%	.0%	49.3%
ESRI	28.9	.0	22.3	0	18.2%	.0%	61.7%	.0%
Digital	26.6	21.6	.0	483	16.7%	25.0%	.0%	15.4%
Intergraph	19.2	4.8	7.7	278	12.1%	5.6%	21.3%	8.9%
Landmark Graphics	18.9	8.5	4.2	94	11.9%	9.9%	11.5%	3.0%
Data General	9.5	8.0	.0	513	6.0%	9.3%	.0%	16.4%
Silicon Graphics	3.1	2.6	.0	61	1.9%	3.0%	.0%	1.9%
Autometric	2.7	.7	.4	28	1.7%	.9%	1.0%	.9%
IBM	2.6	1.8	.4	55	1.6%	2.1%	1.2%	1.8%
Hewlett-Packard	1.9	1.6	.0	45	1.2%	1.8%	.0%	1.4%
Other Companies	2.0	.5	1.2	31	1.3%	.6%	3.2%	1.0%
All Companies	159.2	86.4	36.1	3,132	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	159.2	86.4	36.1	3,132	100.0%	100.0%	100.0%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	86.1	71.2	.0	2,698	54.1%	82.4%	.0%	86.1%
All Turnkey & SW Companies	73.1	15.2	36.1	435	45.9%	17.6%	100.0%	13.9%

Source: Dataquest (February 1994)

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Table 15
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Personal Computer
Region: North America
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Autodesk	20.4	.0	20.4	0	8.8%	.0%	18.9%	.0%
IBM	18.8	18.8	.0	6,238	8.1%	16.1%	.0%	13.2%
Apple Computer	16.8	16.8	.0	4,416	7.2%	14.4%	.0%	9.4%
ESRI	15.4	.0	14.6	0	6.6%	.0%	13.6%	.0%
MapInfo	12.8	.0	11.0	0	5.5%	.0%	10.2%	.0%
Strategic Mapping	10.3	.0	9.3	0	4.4%	.0%	8.6%	.0%
Intergraph	10.3	3.6	6.8	1,288	4.4%	3.0%	6.3%	2.7%
Hewlett-Packard	10.0	9.0	.0	3,421	4.3%	7.7%	.0%	7.3%
Understanding Systems	9.0	1.1	7.0	193	3.9%	.9%	6.5%	.4%
Digital	6.7	6.3	.0	2,125	2.9%	5.4%	.0%	4.5%
ETAK	6.7	.3	6.4	12	2.9%	.2%	5.9%	.0%
PCI Remote Sensing Corp	6.6	.0	6.6	0	2.8%	.0%	6.1%	.0%
Enghouse Systems Ltd.	4.1	.0	3.7	0	1.8%	.0%	3.4%	.0%
GeoGraphix	4.0	.0	3.0	0	1.7%	.0%	2.7%	.0%
Tactics Int'l	3.5	.0	3.5	0	1.5%	.0%	3.2%	.0%
Intera Tydac	2.0	.0	2.0	0	.9%	.0%	1.8%	.0%
Facility Mapping Systems	1.9	.0	1.7	0	.8%	.0%	1.6%	.0%
Terra Sciences	1.8	.0	1.8	0	.8%	.0%	1.7%	.0%
Generation 5 Technology	1.6	.0	1.6	0	.7%	.0%	1.5%	.0%
Softdesk	1.5	.0	1.5	0	.6%	.0%	1.4%	.0%
ERDAS	1.5	.3	1.1	77	.6%	.3%	1.0%	.2%

(Continued)

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Table 15 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Personal Computer
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Maptech	1.2	.0	1.2	0	.5%	.0%	1.1%	.0%
PacSoft	1.1	.0	1.1	0	.5%	.0%	1.0%	.0%
Other Companies	65.3	60.6	4.0	29,365	28.0%	52.0%	3.7%	62.3%
All Companies	232.8	116.6	107.9	47,135	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	228.8	116.4	104.2	47,082	98.3%	99.8%	96.6%	99.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	4.0	.3	3.7	52	1.7%	.2%	3.4%	.1%
All Hardware Companies	112.1	110.8	.0	45,439	48.2%	95.0%	.0%	96.4%
All Turnkey & SW Companies	120.7	5.8	107.9	1,695	51.8%	5.0%	100.0%	3.6%

Source: Dataquest (February 1994)

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Table 16
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Intergraph	140.6	59.6	38.8	3,119	18.8%	17.3%	16.6%	11.9%
Siemens Nixdorf Info systeme	126.5	42.7	48.4	2,066	17.0%	12.4%	20.8%	7.9%
IBM	54.9	43.5	4.4	2,808	7.4%	12.6%	1.9%	10.7%
Digital	50.1	37.2	.0	1,875	6.7%	10.8%	.0%	7.2%
Landmark Graphics	38.9	17.5	8.6	193	5.2%	5.1%	3.7%	.7%
ESRI	31.2	.0	25.0	0	4.2%	.0%	10.7%	.0%
Sun Microsystems	28.5	23.2	.0	980	3.8%	6.7%	.0%	3.7%
ICL	26.0	15.2	9.0	749	3.5%	4.4%	3.9%	2.9%
Hewlett-Packard	24.6	21.0	.0	1,206	3.3%	6.1%	.0%	4.6%
Smallworld Systems	17.0	3.9	9.4	377	2.3%	1.1%	4.0%	1.4%
Autodesk	17.0	.0	17.0	0	2.3%	.0%	7.3%	.0%
GDS	14.8	6.6	6.7	307	2.0%	1.9%	2.9%	1.2%
Straessle Informationssysteme	9.5	1.3	6.0	139	1.3%	.4%	2.6%	.5%
Graftek	9.1	3.4	3.2	161	1.2%	1.0%	1.4%	.6%
Laser-Scan	8.9	2.8	3.9	54	1.2%	.8%	1.7%	.2%
Sysscan	8.5	3.4	2.5	88	1.1%	1.0%	1.1%	.3%
Unisys	8.2	1.7	2.7	153	1.1%	.5%	1.2%	.6%
Computervision	7.5	1.7	2.4	98	1.0%	.5%	1.0%	.4%
Sysdeco Ltd.	6.9	3.4	1.7	60	.9%	1.0%	.7%	.2%
Kohns & Poppenhaeger	6.6	3.0	2.6	76	.9%	.9%	1.1%	.3%
Genasys II	6.2	.6	4.4	26	.8%	.2%	1.9%	.1%

(Continued)

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Table 16 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
APIC Systemes	5.9	.0	4.0	0	.8%	.0%	1.7%	.0%
Silicon Graphics	5.9	5.2	.0	283	.8%	1.5%	.0%	1.1%
Spectrum Graphics	5.4	1.6	2.7	52	.7%	.5%	1.2%	.2%
Star Informatic	5.3	1.2	3.3	210	.7%	.4%	1.4%	.8%
Clemessy	4.8	3.8	.7	14	.6%	1.1%	.3%	.1%
GeoVision Systems	3.3	.2	1.8	6	.4%	.1%	.8%	.0%
Control Data Systems	3.2	1.7	.8	83	.4%	.5%	.4%	.3%
Ground Modelling Systems	2.9	1.3	1.3	239	.4%	.4%	.6%	.9%
PAFEC	2.7	.9	1.3	38	.4%	.3%	.6%	.1%
MapInfo	2.7	.0	2.3	0	.4%	.0%	1.0%	.0%
Geometria GIS Systems House	2.6	.3	.1	26	.3%	.1%	.0%	.1%
Synercom	2.2	.0	.9	0	.3%	.0%	.4%	.0%
ERDAS	2.2	.5	1.5	39	.3%	.1%	.7%	.1%
RIB/Bausoftware	2.0	.2	1.6	22	.3%	.1%	.7%	.1%
Ziegler Informatics	2.0	.0	2.0	0	.3%	.0%	.9%	.0%
Enghouse Systems Ltd.	1.9	.1	1.7	3	.3%	.0%	.7%	.0%
Strategic Mapping	1.9	.0	1.7	0	.2%	.0%	.7%	.0%
ETAK	1.7	.1	1.6	3	.2%	.0%	.7%	.0%
Dynamic Graphics	1.4	.0	.9	0	.2%	.0%	.4%	.0%
EME	1.2	.3	.5	45	.2%	.1%	.2%	.2%
Contract Data Research	1.2	.0	.3	0	.2%	.0%	.1%	.0%

(Continued)

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Table 16 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
DAPCO	1.1	.0	.8	0	.2%	.0%	.3%	.0%
Research Machines	1.1	1.1	.0	397	.1%	.3%	.0%	1.5%
Other Companies	40.1	33.9	4.7	10,207	5.4%	9.9%	2.0%	39.0%
All Companies	745.9	344.1	233.1	26,205	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	493.3	256.2	128.5	21,458	66.1%	74.5%	55.1%	81.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	252.6	87.9	104.6	4,746	33.9%	25.5%	44.9%	18.1%
All Hardware Companies	177.3	151.6	.3	17,365	23.8%	44.1%	.1%	66.3%
All Turnkey & SW Companies	568.6	192.5	232.8	8,839	76.2%	55.9%	99.9%	33.7%

Source: Dataquest (February 1994)

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Table 17
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Technical Workstation
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Siemens Nixdorf Info systeme	120.2	39.8	46.7	1,967	22.8%	17.3%	27.9%	20.0%
Intergraph	119.6	53.5	28.3	1,945	22.7%	23.3%	16.9%	19.8%
IBM	32.7	28.0	1.4	1,225	6.2%	12.2%	.9%	12.5%
ICL	26.0	15.2	9.0	749	4.9%	6.6%	5.4%	7.6%
Landmark Graphics	23.5	10.6	5.2	116	4.4%	4.6%	3.1%	1.2%
Hewlett-Packard	23.1	19.6	.0	785	4.4%	8.5%	.0%	8.0%
Smallworld Systems	17.0	3.9	9.4	377	3.2%	1.7%	5.6%	3.8%
ESRI	16.2	.0	12.5	0	3.1%	.0%	7.5%	.0%
Digital	15.6	11.2	.0	459	3.0%	4.9%	.0%	4.7%
GDS	14.8	6.6	6.7	307	2.8%	2.9%	4.0%	3.1%
Sun Microsystems	10.3	8.1	.0	467	1.9%	3.5%	.0%	4.8%
Straessle Informationssysteme	9.5	1.3	6.0	139	1.8%	.6%	3.6%	1.4%
Laser-Scan	8.5	2.5	3.8	52	1.6%	1.1%	2.3%	.5%
Computervision	7.4	1.7	2.4	98	1.4%	.7%	1.4%	1.0%
Graftek	7.3	2.9	2.8	118	1.4%	1.2%	1.7%	1.2%
Sysdeco Ltd.	6.9	3.4	1.7	60	1.3%	1.5%	1.0%	.6%
Kohns & Poppenhaeger	6.6	3.0	2.6	76	1.2%	1.3%	1.6%	.8%
APIC Systemes	5.9	.0	4.0	0	1.1%	.0%	2.4%	.0%
Unisys	5.7	.9	2.2	84	1.1%	.4%	1.3%	.9%
Genasys II	5.6	.6	3.9	12	1.1%	.2%	2.3%	.1%
Spectrum Graphics	5.4	1.6	2.7	52	1.0%	.7%	1.6%	.5%

(Continued)

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Table 17 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Technical Workstation
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Star Informatic	5.3	1.2	3.3	210	1.0%	.5%	1.9%	2.1%
Silicon Graphics	5.0	4.5	.0	268	.9%	2.0%	.0%	2.7%
Sysscan	4.5	1.5	1.6	56	.9%	.7%	1.0%	.6%
Clemessy	4.3	3.4	.6	12	.8%	1.5%	.4%	.1%
Control Data Systems	3.2	1.7	.8	83	.6%	.8%	.5%	.8%
GeoVision Systems	2.8	.2	1.5	6	.5%	.1%	.9%	.1%
PAFEC	2.7	.9	1.3	38	.5%	.4%	.8%	.4%
Synercom	1.7	.0	.7	0	.3%	.0%	.4%	.0%
ERDAS	1.7	.4	1.1	10	.3%	.2%	.7%	.1%
Dynamic Graphics	1.3	.0	.9	0	.3%	.0%	.5%	.0%
DAPCO	1.1	.0	.8	0	.2%	.0%	.4%	.0%
Autodesk	1.0	.0	1.0	0	.2%	.0%	.6%	.0%
Other Companies	5.5	1.4	2.8	54	1.0%	.6%	1.6%	.5%
All Companies	527.7	229.7	167.6	9,826	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	300.1	150.5	72.6	5,997	56.9%	65.5%	43.3%	61.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	227.7	79.2	95.0	3,830	43.1%	34.5%	56.7%	39.0%
All Hardware Companies	82.7	69.4	.3	3,149	15.7%	30.2%	.2%	32.0%
All Turnkey & SW Companies	445.0	160.3	167.3	6,677	84.3%	69.8%	99.8%	68.0%

Source: Dataquest (February 1994)

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Table 18
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Host-Dependent
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
IBM	11.9	7.5	1.8	161	31.2%	29.6%	41.0%	31.0%
Digital	10.5	7.6	.0	0	27.6%	29.9%	.0%	.0%
Siemens Nixdorf Info systeme	6.3	2.8	1.7	99	16.6%	11.1%	39.0%	19.0%
Other Companies	9.4	7.4	.9	260	24.7%	29.4%	20.0%	50.0%
All Companies	38.1	25.3	4.4	520	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	30.9	21.8	2.6	416	81.0%	86.3%	57.7%	80.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	7.2	3.5	1.9	104	19.0%	13.7%	42.3%	20.0%
All Hardware Companies	17.5	14.2	.0	244	45.9%	56.1%	.0%	47.0%
All Turnkey & SW Companies	20.6	11.1	4.4	275	54.1%	43.9%	100.0%	53.0%

Source: Dataquest (February 1994)

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Table 19
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Server
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Digital	19.2	13.8	.0	276	21.3%	30.0%	.0%	22.2%
Sun Microsystems	18.2	15.1	.0	513	20.2%	32.7%	.0%	41.2%
Landmark Graphics	15.5	7.0	3.4	77	17.2%	15.1%	17.8%	6.1%
Intergraph	12.7	3.2	5.1	137	14.1%	6.9%	26.6%	11.0%
ESRI	9.7	.0	7.5	0	10.8%	.0%	39.3%	.0%
IBM	5.3	3.1	1.1	78	5.8%	6.6%	5.9%	6.2%
Sysscan	4.0	1.9	.8	32	4.5%	4.0%	4.4%	2.5%
Unisys	2.5	.8	.6	69	2.7%	1.7%	2.9%	5.5%
Graftek	1.7	.5	.4	37	1.9%	1.0%	2.1%	3.0%
Other Companies	1.3	.9	.2	28	1.4%	2.0%	.9%	2.3%
All Companies	89.9	46.1	19.1	1,247	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	85.9	44.2	18.2	1,216	95.5%	96.0%	95.6%	97.5%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	4.0	1.9	.8	32	4.5%	4.0%	4.4%	2.5%
All Hardware Companies	39.1	30.4	.0	832	43.5%	65.9%	.0%	66.8%
All Turnkey & SW Companies	50.8	15.7	19.1	415	56.5%	34.1%	100.0%	33.2%

Source: Dataquest (February 1994)

CAEC-WW-MS-9401

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Table 20
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Personal Computer
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Autodesk	16.0	.0	16.0	0	17.7%	.0%	38.0%	.0%
Intergraph	8.3	2.9	5.4	1,037	9.2%	6.6%	13.0%	7.1%
ESRI	5.2	.0	4.9	0	5.7%	.0%	11.7%	.0%
IBM	5.0	5.0	.0	1,345	5.6%	11.7%	.0%	9.2%
Digital	4.8	4.6	.0	1,140	5.3%	10.6%	.0%	7.8%
Ground Modelling Systems	2.9	1.3	1.3	239	3.2%	3.0%	3.1%	1.6%
MapInfo	2.4	.0	2.1	0	2.7%	.0%	4.9%	.0%
Ziegler Informatics	2.0	.0	2.0	0	2.2%	.0%	4.7%	.0%
Strategic Mapping	1.9	.0	1.7	0	2.1%	.0%	4.0%	.0%
Geometria GIS Systems House	1.8	.2	.0	21	2.0%	.5%	.0%	.1%
RIB/Bausoftware	1.6	.2	1.2	20	1.8%	.5%	2.9%	.1%
Hewlett-Packard	1.5	1.4	.0	421	1.7%	3.2%	.0%	2.9%
Enghouse Systems Ltd.	1.5	.0	1.3	0	1.6%	.0%	3.1%	.0%
ETAK	1.3	.1	1.3	2	1.5%	.1%	3.0%	.0%
EME	1.2	.3	.5	45	1.3%	.8%	1.3%	.3%
Contract Data Research	1.2	.0	.3	0	1.3%	.0%	.8%	.0%
Research Machines	1.1	1.1	.0	397	1.2%	2.5%	.0%	2.7%
Other Companies	30.7	26.0	3.9	9,946	34.0%	60.5%	9.3%	68.1%
All Companies	90.1	43.0	41.9	14,611	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	76.4	39.6	35.1	13,830	84.8%	92.1%	83.8%	94.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	13.7	3.4	6.8	781	15.2%	7.9%	16.2%	5.3%
All Hardware Companies	38.0	37.6	.0	13,139	42.2%	87.4%	.0%	89.9%
All Turnkey & SW Companies	52.1	5.4	41.9	1,472	57.8%	12.6%	100.0%	10.1%

Source: Dataquest (February 1994)

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Table 21
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Fujitsu	57.7	29.7	20.2	1,172	15.7%	14.7%	18.1%	11.6%
Mitsubishi Electric	49.1	38.4	6.1	777	13.4%	19.0%	5.5%	7.7%
Intergraph	38.1	16.7	9.9	841	10.4%	8.3%	8.9%	8.4%
Uchida Yoko	22.5	13.3	8.2	624	6.1%	6.6%	7.4%	6.2%
GDS	19.3	10.1	7.3	355	5.3%	5.0%	6.5%	3.5%
Hitachi	18.9	8.9	8.1	726	5.1%	4.4%	7.3%	7.2%
Toshiba—NO OEM	16.2	8.1	6.5	180	4.4%	4.0%	5.8%	1.8%
Landmark Graphics	15.1	6.8	3.3	75	4.1%	3.4%	3.0%	.7%
Mitsui Engineering	14.7	10.2	3.0	120	4.0%	5.0%	2.7%	1.2%
Digital	10.6	8.8	.0	380	2.9%	4.3%	.0%	3.8%
IBM	8.9	6.2	1.3	790	2.4%	3.1%	1.1%	7.9%
Hewlett-Packard	8.3	7.1	.0	350	2.3%	3.5%	.0%	3.5%
Autodesk	8.2	.0	8.2	0	2.2%	.0%	7.3%	.0%
NEC	8.1	5.1	2.3	308	2.2%	2.5%	2.0%	3.1%
Siemens Nixdorf Info systeme	7.9	2.5	3.1	125	2.2%	1.3%	2.8%	1.2%
INS Engineering	7.9	3.9	4.0	22	2.2%	1.9%	3.6%	.2%
ESRI	7.7	.0	6.2	0	2.1%	.0%	5.5%	.0%
Sun Microsystems	6.7	5.4	.0	271	1.8%	2.7%	.0%	2.7%
Century Research Center	4.7	2.5	1.8	33	1.3%	1.2%	1.6%	.3%
CADIX	4.2	1.8	2.0	23	1.1%	.9%	1.8%	.2%
GeoVision Systems	3.5	.3	1.9	7	.9%	.1%	1.7%	.1%

(Continued)

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Table 21 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Mutoh Industries—NO OEM	2.8	1.0	1.6	61	.8%	.5%	1.4%	.6%
Genasys II	1.9	.2	1.4	9	.5%	.1%	1.2%	.1%
Synercom	1.9	.0	.8	0	.5%	.0%	.7%	.0%
Andor	1.7	.4	1.3	31	.5%	.2%	1.1%	.3%
Other Companies	19.8	15.1	3.3	2,787	5.4%	7.5%	3.0%	27.7%
All Companies	366.3	202.1	111.7	10,067	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	148.7	76.1	43.1	5,854	40.6%	37.7%	38.6%	58.2%
All Asian-Based Companies	208.3	123.0	65.0	4,077	56.9%	60.9%	58.2%	40.5%
All European-Based Companies	9.2	3.0	3.6	135	2.5%	1.5%	3.2%	1.3%
All Hardware Companies	49.5	44.7	.1	4,687	13.5%	22.1%	.0%	46.6%
All Turnkey & SW Companies	316.8	157.4	111.6	5,380	86.5%	77.9%	100.0%	53.4%

Source: Dataquest (February 1994)

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Table 22
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Technical Workstation
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Fujitsu	39.0	21.1	12.8	890	14.6%	14.2%	16.3%	20.6%
Mitsubishi Electric	37.8	32.1	2.7	354	14.2%	21.6%	3.4%	8.2%
Intergraph	31.7	14.2	7.5	515	11.9%	9.5%	9.6%	11.9%
Uchida Yoko	20.3	12.0	7.3	508	7.6%	8.1%	9.4%	11.8%
GDS	19.3	10.1	7.3	355	7.3%	6.8%	9.3%	8.2%
Toshiba—NO OEM	16.2	8.1	6.5	180	6.1%	5.4%	8.3%	4.2%
Hitachi	14.4	6.8	6.2	285	5.4%	4.6%	7.9%	6.6%
Mitsui Engineering	13.5	9.3	2.8	93	5.1%	6.3%	3.5%	2.2%
Landmark Graphics	9.1	4.1	2.0	45	3.4%	2.8%	2.6%	1.0%
Hewlett-Packard	8.1	6.8	.0	274	3.0%	4.6%	.0%	6.3%
INS Engineering	7.9	3.9	4.0	22	3.0%	2.6%	5.1%	.5%
Siemens Nixdorf Info systeme	7.5	2.4	3.0	118	2.8%	1.6%	3.9%	2.7%
NEC	7.3	4.5	2.1	204	2.7%	3.0%	2.7%	4.7%
Sun Microsystems	4.8	3.8	.0	217	1.8%	2.5%	.0%	5.0%
Century Research Center	4.7	2.5	1.8	33	1.8%	1.6%	2.3%	.8%
CADIX	4.2	1.8	2.0	23	1.6%	1.2%	2.6%	.5%
ESRI	4.0	.0	3.1	0	1.5%	.0%	3.9%	.0%
Digital	3.3	2.7	.0	101	1.3%	1.8%	.0%	2.3%
GeoVision Systems	2.9	.2	1.6	6	1.1%	.1%	2.0%	.1%
Genasys II	1.7	.2	1.2	4	.7%	.1%	1.6%	.1%
Mutoh Industries—NO OEM	1.5	.5	.8	22	.6%	.4%	1.0%	.5%

(Continued)

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Table 22 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Technical Workstation
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Synercom	1.4	.0	.6	0	.5%	.0%	.7%	.0%
IBM	1.4	.7	.4	25	.5%	.5%	.5%	.6%
Other Companies	4.3	1.0	2.5	40	1.6%	.7%	3.3%	.9%
All Companies	266.2	148.7	78.1	4,317	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	91.2	43.5	25.8	1,575	34.2%	29.3%	33.1%	36.5%
All Asian-Based Companies	166.6	102.6	48.9	2,615	62.6%	69.0%	62.6%	60.6%
All European-Based Companies	8.4	2.7	3.4	126	3.2%	1.8%	4.3%	2.9%
All Hardware Companies	23.3	20.4	.1	850	8.8%	13.7%	.1%	19.7%
All Turnkey & SW Companies	242.9	128.3	78.1	3,466	91.2%	86.3%	99.9%	80.3%

Source: Dataquest (February 1994)

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Table 23
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Host-Dependent
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Fujitsu	18.7	8.6	7.5	282	47.1%	38.5%	68.3%	33.6%
Mitsubishi Electric	6.4	3.0	1.8	18	16.0%	13.4%	16.3%	2.1%
IBM	3.5	2.2	.5	42	8.8%	9.6%	4.8%	5.0%
Digital	2.2	1.8	.0	0	5.6%	8.1%	.0%	.0%
Hitachi	1.1	.5	.5	271	2.8%	2.3%	4.4%	32.2%
Other Companies	7.9	6.3	.7	229	19.8%	28.0%	6.1%	27.2%
All Companies	39.8	22.3	11.0	841	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	13.1	10.0	1.1	264	33.0%	44.9%	9.9%	31.4%
All Asian-Based Companies	26.2	12.1	9.8	571	65.9%	54.3%	89.1%	67.8%
All European-Based Companies	.4	.2	.1	6	1.1%	.8%	1.0%	.8%
All Hardware Companies	8.6	7.8	.0	221	21.5%	35.1%	.0%	26.2%
All Turnkey & SW Companies	31.2	14.5	11.0	620	78.5%	64.9%	100.0%	73.8%

Source: Dataquest (February 1994)

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Table 24
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Server
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Landmark Graphics	6.0	2.7	1.3	30	29.6%	26.5%	28.8%	14.0%
Intergraph	4.2	1.8	1.0	45	20.6%	17.4%	20.9%	21.4%
Digital	4.1	3.3	.0	63	20.0%	32.3%	.0%	29.8%
ESRI	2.4	.0	1.9	0	11.8%	.0%	40.3%	.0%
Sun Microsystems	1.9	1.6	.0	54	9.4%	15.5%	.0%	25.2%
IBM	1.3	.7	.3	18	6.6%	6.7%	7.2%	8.3%
Other Companies	.4	.2	.1	3	2.1%	1.6%	2.8%	1.3%
All Companies	20.4	10.2	4.6	213	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	20.0	10.1	4.5	210	98.2%	98.4%	98.5%	98.7%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.4	.2	.1	3	1.8%	1.6%	1.5%	1.3%
All Hardware Companies	6.0	4.9	.0	117	29.3%	47.8%	.0%	55.0%
All Turnkey & SW Companies	14.4	5.3	4.6	96	70.7%	52.2%	100.0%	45.0%

Source: Dataquest (February 1994)

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Table 25
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Personal Computer
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Autodesk	7.5	.0	7.5	0	18.8%	.0%	41.7%	.0%
Mitsubishi Electric	4.9	3.2	1.7	405	12.3%	15.6%	9.3%	8.6%
Hitachi	3.3	1.6	1.4	170	8.3%	7.5%	7.9%	3.6%
IBM	2.7	2.7	.0	706	6.6%	12.7%	.0%	15.0%
Intergraph	2.3	.8	1.5	281	5.6%	3.7%	8.2%	6.0%
Uchida Yoko	2.2	1.3	.9	116	5.4%	6.1%	4.9%	2.5%
Andor	1.7	.4	1.3	31	4.2%	1.8%	6.9%	.7%
Mutoh Industries—NO OEM	1.3	.5	.7	39	3.3%	2.3%	4.1%	.8%
ESRI	1.3	.0	1.2	0	3.2%	.0%	6.7%	.0%
Mitsui Engineering	1.2	.8	.3	27	3.1%	4.0%	1.4%	.6%
Digital	1.0	1.0	.0	215	2.5%	4.7%	.0%	4.6%
Other Companies	10.6	8.7	1.6	2,707	26.5%	41.7%	8.9%	57.6%
All Companies	39.9	20.8	18.0	4,696	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	24.4	12.5	11.6	3,805	61.1%	60.0%	64.4%	81.0%
All Asian-Based Companies	15.5	8.3	6.4	892	38.7%	40.0%	35.4%	19.0%
All European-Based Companies	.1	.0	.0	0	.2%	.0%	.1%	.0%
All Hardware Companies	11.6	11.6	.0	3,499	29.1%	55.6%	.0%	74.5%
All Turnkey & SW Companies	28.3	9.3	18.0	1,198	70.9%	44.4%	100.0%	25.5%

Source: Dataquest (February 1994)

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Table 26
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	34.9	15.3	9.1	852	34.2%	35.7%	24.6%	15.0%
Genasys II	8.2	.8	5.7	37	8.0%	1.9%	15.5%	.7%
IBM	6.8	5.9	.3	654	6.6%	13.7%	.8%	11.5%
Landmark Graphics	6.5	2.9	1.4	32	6.4%	6.8%	3.9%	.6%
ESRI	6.3	.0	5.1	0	6.2%	.0%	13.7%	.0%
Radian Corporation	3.5	.0	2.4	0	3.5%	.0%	6.4%	.0%
GDS	3.1	1.4	1.5	66	3.1%	3.2%	3.9%	1.2%
Digital	2.8	2.2	.0	67	2.7%	5.2%	.0%	1.2%
Strategic Mapping	2.2	.0	1.9	0	2.1%	.0%	5.2%	.0%
Unisys	2.0	1.1	.7	105	2.0%	2.4%	1.9%	1.8%
Graftek	2.0	.7	.7	44	1.9%	1.7%	1.9%	.8%
Data General	1.9	1.5	.1	109	1.9%	3.6%	.2%	1.9%
GeoVision Systems	1.3	.1	.7	2	1.2%	.2%	1.8%	.0%
Enghouse Systems Ltd.	1.2	.0	1.1	2	1.2%	.1%	2.9%	.0%
Siemens Nixdorf Info systeme	1.2	.6	.2	24	1.2%	1.4%	.6%	.4%
Hewlett-Packard	1.2	1.0	.0	258	1.2%	2.4%	.0%	4.5%
Understanding Systems	1.1	.1	.9	22	1.1%	.3%	2.3%	.4%
Sun Microsystems	1.1	.9	.0	45	1.0%	2.0%	.0%	.8%

(Continued)

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Table 26 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: All Platforms
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Earth Resource Mapping	1.1	.0	.9	0	1.0%	.0%	2.5%	.0%
Other Companies	13.9	8.3	4.5	3,361	13.6%	19.4%	12.1%	59.2%
All Companies	102.2	42.9	37.0	5,681	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	99.4	41.9	36.1	5,647	97.3%	97.5%	97.6%	99.4%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	2.7	1.1	.9	34	2.7%	2.5%	2.4%	.6%
All Hardware Companies	19.6	18.1	.1	4,433	19.1%	42.0%	.2%	78.0%
All Turnkey & SW Companies	82.6	24.9	37.0	1,248	80.9%	58.0%	99.8%	22.0%

Source: Dataquest (February 1994)

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Table 27
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Technical Workstation
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	29.0	13.0	6.9	538	44.0%	50.4%	29.8%	48.0%
Genasys II	7.4	.7	5.2	18	11.1%	2.8%	22.3%	1.6%
Landmark Graphics	3.9	1.8	.9	19	5.9%	6.8%	3.7%	1.7%
IBM	3.7	3.2	.1	142	5.6%	12.6%	.4%	12.7%
ESRI	3.3	.0	2.5	0	5.0%	.0%	11.0%	.0%
GDS	3.1	1.4	1.5	66	4.7%	5.3%	6.3%	5.8%
Radian Corporation	2.2	.0	1.3	0	3.3%	.0%	5.8%	.0%
Unisys	1.6	.8	.6	83	2.4%	3.1%	2.4%	7.4%
Graftek	1.6	.6	.6	32	2.4%	2.4%	2.6%	2.9%
Data General	1.4	1.1	.1	82	2.2%	4.3%	.3%	7.3%
Digital	1.2	1.0	.0	49	1.8%	3.7%	.0%	4.4%
Siemens Nixdorf Info systeme	1.2	.6	.2	23	1.7%	2.3%	.9%	2.0%
GeoVision Systems	1.1	.1	.6	2	1.6%	.3%	2.5%	.2%
Earth Resource Mapping	1.1	.0	.9	0	1.6%	.0%	4.0%	.0%
Other Companies	4.4	1.5	1.8	68	6.6%	5.9%	8.0%	6.0%
All Companies	65.9	25.8	23.1	1,122	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	63.4	24.8	22.2	1,090	96.2%	96.1%	96.4%	97.1%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	2.5	1.0	.8	33	3.8%	3.9%	3.6%	2.9%
All Hardware Companies	6.8	5.9	.1	309	10.3%	22.7%	.3%	27.5%
All Turnkey & SW Companies	59.2	19.9	23.0	813	89.7%	77.3%	99.7%	72.5%

Source: Dataquest (February 1994)

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Table 28
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Host-Dependent
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
IBM	.8	.5	.1	11	32.5%	35.2%	24.0%	24.9%
Digital	.6	.5	.0	0	22.2%	31.0%	.0%	.0%
Other Companies	1.1	.5	.4	34	45.2%	33.8%	76.0%	75.1%
All Companies	2.5	1.5	.5	45	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	2.4	1.4	.5	44	94.8%	95.9%	96.0%	97.2%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.1	.1	.0	1	5.2%	4.1%	4.0%	2.8%
All Hardware Companies	.7	.6	.0	4	27.0%	39.3%	.0%	9.6%
All Turnkey & SW Companies	1.8	.9	.5	41	73.0%	60.7%	100.0%	90.4%

Source: Dataquest (February 1994)

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Table 29
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Server
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Intergraph	3.8	1.6	.9	56	32.6%	32.5%	25.9%	35.8%
Landmark Graphics	2.6	1.2	.6	13	21.9%	23.2%	17.0%	8.2%
ESRI	2.0	.0	1.5	0	16.7%	.0%	45.2%	.0%
Digital	1.0	.8	.0	18	8.7%	16.4%	.0%	11.9%
Other Companies	2.4	1.4	.4	69	20.1%	27.9%	11.9%	44.2%
All Companies	11.8	5.0	3.4	156	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	11.8	5.0	3.4	156	100.0%	100.0%	100.0%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	2.3	1.9	.0	72	19.7%	38.5%	.0%	46.3%
All Turnkey & SW Companies	9.5	3.1	3.4	84	80.3%	61.5%	100.0%	53.7%

Source: Dataquest (February 1994)

CAEC-WW-MS-9401

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Table 30
1993 CAD/CAM/CAE/GIS Market Share

Application: GIS/Mapping
Platform: Personal Computer
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Strategic Mapping	2.2	.0	1.9	0	9.8%	.0%	19.1%	.0%
Intergraph	2.1	.7	1.4	258	9.4%	6.6%	13.4%	5.9%
IBM	1.9	1.9	.0	494	8.5%	17.4%	.0%	11.3%
ESRI	1.1	.0	1.0	0	4.8%	.0%	9.9%	.0%
Other Companies	14.8	8.2	5.8	3,606	67.5%	76.0%	57.6%	82.7%
All Companies	21.9	10.7	10.1	4,358	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	21.9	10.7	10.1	4,358	99.7%	100.0%	99.7%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.1	.0	.0	0	.3%	.0%	.3%	.0%
All Hardware Companies	9.8	9.7	.0	4,048	44.5%	90.6%	.0%	92.9%
All Turnkey & SW Companies	12.2	1.0	10.1	310	55.5%	9.4%	100.0%	7.1%

Source: Dataquest (February 1994)

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Table 31
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	338.7	102.2	110.1	9,875	14.1%	8.6%	13.3%	5.3%
IBM	254.5	192.6	32.5	25,450	10.6%	16.2%	3.9%	13.6%
Autodesk	188.8	.0	188.8	0	7.9%	.0%	22.8%	.0%
Fujitsu	151.8	88.1	47.3	5,982	6.3%	7.4%	5.7%	3.2%
Digital	100.2	82.2	.1	7,946	4.2%	6.9%	.0%	4.2%
Apple Computer	98.6	98.6	.0	24,572	4.1%	8.3%	.0%	13.1%
Computervision	75.5	18.5	23.2	944	3.1%	1.6%	2.8%	.5%
Nemetschek	73.1	4.8	61.0	468	3.0%	.4%	7.4%	.2%
NEC	64.5	43.2	15.6	5,325	2.7%	3.6%	1.9%	2.8%
Hewlett-Packard	57.5	50.3	.0	10,638	2.4%	4.2%	.0%	5.7%
IEZ	52.7	18.5	26.4	1,158	2.2%	1.6%	3.2%	.6%
Kozo Keikaku Engineering	50.4	2.3	12.8	93	2.1%	.2%	1.5%	.0%
Nihon Unisys	47.8	27.1	11.6	267	2.0%	2.3%	1.4%	.1%
Silicon Graphics	35.3	32.7	.0	1,375	1.5%	2.7%	.0%	.7%
GDS	26.5	12.1	11.8	523	1.1%	1.0%	1.4%	.3%
Tachnodia	26.1	21.2	.3	344	1.1%	1.8%	.0%	.2%
Auto-Trol	24.1	8.6	9.5	307	1.0%	.7%	1.1%	.2%
Sun Microsystems	21.4	17.3	.0	950	.9%	1.5%	.0%	.5%
Toshiba—NO OEM	19.4	9.7	7.8	464	.8%	.8%	.9%	.2%
Siemens Nixdorf Info systeme	18.9	10.3	3.4	818	.8%	.9%	.4%	.4%
Hitachi	18.4	8.7	7.9	750	.8%	.7%	1.0%	.4%

(Continued)

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Table 31 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Mitsubishi Electric	17.5	13.7	2.2	277	.7%	1.2%	.3%	.1%
Aspen Technology	17.0	.0	11.0	0	.7%	.0%	1.3%	.0%
CAD Centre	16.5	.0	13.4	0	.7%	.0%	1.6%	.0%
Sony	14.9	14.9	.0	737	.6%	1.3%	.0%	.4%
Soft-Tech Software Technologies	14.7	1.9	11.4	948	.6%	.2%	1.4%	.5%
CPU	14.4	4.8	9.6	343	.6%	.4%	1.2%	.2%
Isicad CAD/CAM Systeme	13.8	2.5	9.3	107	.6%	.2%	1.1%	.1%
Han Dataport	12.5	3.8	6.8	280	.5%	.3%	.8%	.1%
Microway	12.5	7.5	3.8	138	.5%	.6%	.5%	.1%
Wiechers Datentechnik	12.3	4.3	5.5	296	.5%	.4%	.7%	.2%
Kockums Computer Systems	12.1	3.1	4.0	561	.5%	.3%	.5%	.3%
Accugraph	12.1	5.4	5.5	710	.5%	.5%	.7%	.4%
Mutoh Industries—NO OEM	11.3	4.0	6.2	217	.5%	.3%	.7%	.1%
Moss Systems	10.5	.9	6.0	61	.4%	.1%	.7%	.0%
Andor	10.0	2.2	7.4	182	.4%	.2%	.9%	.1%
Century Research Center	9.9	5.2	3.7	69	.4%	.4%	.4%	.0%
Technische Computer Systeme	9.6	1.5	7.2	157	.4%	.1%	.9%	.1%
Hitachi Zosen Info Systems	9.1	7.7	.4	81	.4%	.7%	.0%	.0%
EA Systems	7.8	.0	7.8	0	.3%	.0%	.9%	.0%
Hochtief	7.7	1.3	3.7	95	.3%	.1%	.4%	.1%
INS Engineering	7.5	3.7	3.8	34	.3%	.3%	.5%	.0%

(Continued)

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Table 31 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Star Informatic	7.4	2.4	4.2	485	.3%	.2%	.5%	.3%
RIB/Bausoftware	7.4	.5	6.1	45	.3%	.0%	.7%	.0%
Softdesk	7.4	.0	7.4	0	.3%	.0%	.9%	.0%
ItalCad	7.4	2.4	2.8	84	.3%	.2%	.3%	.0%
CAD Distribution	6.4	.0	5.8	112	.3%	.0%	.7%	.1%
Complansoft CAD	6.2	3.1	3.1	149	.3%	.3%	.4%	.1%
Graphisoft Software Dev	6.0	.0	6.0	0	.2%	.0%	.7%	.0%
International Software Systems	5.6	.0	5.6	0	.2%	.0%	.7%	.0%
mb Programme	5.3	2.2	2.2	120	.2%	.2%	.3%	.1%
Uchida Yoko	5.2	3.1	1.9	145	.2%	.3%	.2%	.1%
BATISOFT	5.1	.7	2.6	339	.2%	.1%	.3%	.2%
Micrografx	4.9	.0	4.9	0	.2%	.0%	.6%	.0%
Sigma Design	4.8	1.0	3.5	271	.2%	.1%	.4%	.1%
Research Machines	4.6	4.6	.0	1,700	.2%	.4%	.0%	.9%
Toyo Information Systems—NO OEM	4.6	2.7	1.4	51	.2%	.2%	.2%	.0%
Computer Services Consultants	4.2	.0	4.2	0	.2%	.0%	.5%	.0%
RoboCAD Solutions	4.1	.0	3.2	0	.2%	.0%	.4%	.0%
Sweet's Electronic Publishing	4.0	.0	3.1	0	.2%	.0%	.4%	.0%
Gable CAD Systems	4.0	2.8	.6	46	.2%	.2%	.1%	.0%
Datagraphic	3.6	1.7	1.4	63	.1%	.1%	.2%	.0%
Triplan	3.5	1.4	1.7	52	.1%	.1%	.2%	.0%

(Continued)

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Table 31 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Control Data Systems	3.4	1.6	.8	134	.1%	.1%	.1%	.1%
Sener Inginiera y Sistemaus	3.2	.0	3.2	0	.1%	.0%	.4%	.0%
Foresight Resources	3.1	.0	2.9	0	.1%	.0%	.3%	.0%
Integrated Computer Graphics	3.0	1.1	1.7	140	.1%	.1%	.2%	.1%
Adam Net	2.9	.4	1.8	6	.1%	.0%	.2%	.0%
ICAD	2.9	.0	2.3	0	.1%	.0%	.3%	.0%
Assigraph	2.8	.0	2.3	0	.1%	.0%	.3%	.0%
Ziegler Informatics	2.4	.0	2.4	0	.1%	.0%	.3%	.0%
Ground Modelling Systems	2.4	1.2	1.0	223	.1%	.1%	.1%	.1%
Design Automation	2.3	.5	1.8	80	.1%	.0%	.2%	.0%
Lamp Software	2.2	.5	1.6	152	.1%	.0%	.2%	.1%
IMSI	2.2	.0	2.2	0	.1%	.0%	.3%	.0%
CADKEY	2.1	.0	2.1	0	.1%	.0%	.3%	.0%
Moda CAD	2.1	.4	1.5	20	.1%	.0%	.2%	.0%
Elstree Computing	2.1	.9	1.1	62	.1%	.1%	.1%	.0%
Research Engineers—Civilsoft	2.1	.0	2.1	0	.1%	.0%	.2%	.0%
Carrier Corporation	2.0	.0	2.0	0	.1%	.0%	.2%	.0%
MEDESIGN	1.9	.6	.7	21	.1%	.0%	.1%	.0%
Radan Computational	1.9	.7	1.0	39	.1%	.1%	.1%	.0%
Mitsui Engineering	1.9	1.3	.4	15	.1%	.1%	.0%	.0%
Matra Datavision	1.8	.5	1.0	17	.1%	.0%	.1%	.0%
Softronics	1.8	.4	1.4	135	.1%	.0%	.2%	.1%

(Continued)

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Table 31 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Land Innovation	1.8	.0	1.8	0	.1%	.0%	.2%	.0%
Sinus Software	1.7	.9	.6	40	.1%	.1%	.1%	.0%
American Small Business Comp.	1.7	.0	1.7	0	.1%	.0%	.2%	.0%
CADWorks	1.6	.0	1.6	0	.1%	.0%	.2%	.0%
Macao Systems	1.6	.9	.6	16	.1%	.1%	.1%	.0%
GRAPHSOFT	1.5	.0	1.5	0	.1%	.0%	.2%	.0%
ECOM Associates	1.4	.0	1.4	5	.1%	.0%	.2%	.0%
Georgia Tech Research Corp.	1.3	.0	1.3	0	.1%	.0%	.2%	.0%
CAE-link	1.3	.0	1.3	0	.1%	.0%	.2%	.0%
Engineered Software	1.2	.0	1.2	0	.1%	.0%	.1%	.0%
Mucke Software	1.2	.5	.5	25	.0%	.0%	.1%	.0%
ARKTEC	1.1	.1	.9	44	.0%	.0%	.1%	.0%
Evolution Computing	1.0	.0	1.0	0	.0%	.0%	.1%	.0%
Other Companies	219.3	211.3	5.9	79,350	9.1%	17.8%	.7%	42.3%
All Companies	2,399.1	1,189.3	828.5	187,728	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	1,548.7	836.8	468.0	163,172	64.6%	70.4%	56.5%	86.9%
All Asian-Based Companies	490.6	265.1	143.9	15,547	20.5%	22.3%	17.4%	8.3%
All European-Based Companies	359.7	87.4	216.6	9,010	15.0%	7.4%	26.1%	4.8%
All Hardware Companies	715.3	676.4	.4	154,547	29.8%	56.9%	.0%	82.3%
All Turnkey & SW Companies	1,683.7	512.9	828.1	33,182	70.2%	43.1%	100.0%	17.7%

Source: Dataquest (February 1994)

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Table 32
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	257.1	77.0	64.4	3,099	22.4%	15.0%	17.8%	13.8%
IBM	103.7	79.4	11.3	4,214	9.0%	15.4%	3.1%	18.8%
Fujitsu	74.4	39.8	24.7	1,686	6.5%	7.7%	6.8%	7.5%
Computervision	71.4	17.4	21.3	880	6.2%	3.4%	5.9%	3.9%
IEZ	52.7	18.5	26.4	1,158	4.6%	3.6%	7.3%	5.2%
Nihon Unisys	35.8	19.7	9.7	203	3.1%	3.8%	2.7%	.9%
Silicon Graphics	33.9	31.5	.0	1,352	3.0%	6.1%	.0%	6.0%
Nemetschek	33.6	2.2	28.1	93	2.9%	.4%	7.8%	.4%
NEC	29.7	18.4	8.6	836	2.6%	3.6%	2.4%	3.7%
Hewlett-Packard	26.6	22.6	.0	1,233	2.3%	4.4%	.0%	5.5%
Digital	26.5	20.6	.1	927	2.3%	4.0%	.0%	4.1%
GDS	26.5	12.1	11.8	523	2.3%	2.3%	3.3%	2.3%
Auto-Trol	24.1	8.6	9.5	307	2.1%	1.7%	2.6%	1.4%
Tachnodia	22.7	18.2	.2	256	2.0%	3.5%	.1%	1.1%
CAD Centre	16.5	.0	13.4	0	1.4%	.0%	3.7%	.0%
Siemens Nixdorf Info systeme	15.9	7.4	3.4	290	1.4%	1.4%	.9%	1.3%
Toshiba—NO OEM	15.5	7.8	6.2	172	1.4%	1.5%	1.7%	.8%
Sony	14.9	14.9	.0	737	1.3%	2.9%	.0%	3.3%
Hitachi	13.9	6.5	6.0	275	1.2%	1.3%	1.7%	1.2%
Sun Microsystems	13.6	10.8	.0	699	1.2%	2.1%	.0%	3.1%

(Continued)

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Table 32 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Mitsubishi Electric	13.5	11.5	1.0	127	1.2%	2.2%	.3%	.6%
Aspen Technology	12.8	.0	8.3	0	1.1%	.0%	2.3%	.0%
Kozo Keikaku Engineering	12.6	1.3	3.8	13	1.1%	.2%	1.0%	.1%
Wiechers Datentechnik	12.3	4.3	5.5	296	1.1%	.8%	1.5%	1.3%
Kockums Computer Systems	12.1	3.1	4.0	561	1.1%	.6%	1.1%	2.5%
Autodesk	12.1	.0	12.1	0	1.1%	.0%	3.3%	.0%
Accugraph	10.7	5.1	4.5	416	.9%	1.0%	1.2%	1.9%
Moss Systems	10.5	.9	6.0	61	.9%	.2%	1.7%	.3%
Han Dataport	10.3	3.0	5.8	235	.9%	.6%	1.6%	1.0%
Century Research Center	9.9	5.2	3.7	69	.9%	1.0%	1.0%	.3%
Isicad CAD/CAM Systeme	9.4	2.5	4.9	107	.8%	.5%	1.4%	.5%
Microway	8.7	5.3	2.7	86	.8%	1.0%	.7%	.4%
Hitachi Zosen Info Systems	8.1	6.8	.4	81	.7%	1.3%	.1%	.4%
Mutoh Industries—NO OEM	7.9	2.8	4.3	117	.7%	.5%	1.2%	.5%
ItalCad	7.4	2.4	2.8	84	.6%	.5%	.8%	.4%
INS Engineering	6.8	3.4	3.5	19	.6%	.7%	1.0%	.1%
Star Informatic	6.7	1.6	4.2	266	.6%	.3%	1.2%	1.2%
Technische Computer Systeme	6.6	.9	5.0	73	.6%	.2%	1.4%	.3%
Complansoft CAD	6.2	3.1	3.1	149	.5%	.6%	.9%	.7%
Uchida Yoko	4.7	2.8	1.7	118	.4%	.5%	.5%	.5%

(Continued)

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Table 32 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Toyo Information Systems—NO OEM	4.0	2.4	1.3	48	.4%	.5%	.4%	.2%
Gable CAD Systems	4.0	2.8	.6	46	.3%	.5%	.2%	.2%
Triplan	3.5	1.4	1.7	52	.3%	.3%	.5%	.2%
Sener Inginiera y Sistemaus	3.2	.0	3.2	0	.3%	.0%	.9%	.0%
Adam Net	2.9	.4	1.8	6	.3%	.1%	.5%	.0%
ICAD	2.9	.0	2.3	0	.2%	.0%	.6%	.0%
Sigma Design	2.6	.5	1.9	46	.2%	.1%	.5%	.2%
Assigraph	2.6	.0	2.1	0	.2%	.0%	.6%	.0%
RIB/Bausoftware	2.4	.2	1.9	12	.2%	.0%	.5%	.1%
Control Data Systems	2.0	1.0	.6	53	.2%	.2%	.2%	.2%
MEDESIGN	1.9	.6	.7	21	.2%	.1%	.2%	.1%
Radan Computational	1.9	.7	1.0	37	.2%	.1%	.3%	.2%
Integrated Computer Graphics	1.8	.7	1.0	40	.2%	.1%	.3%	.2%
Matra Datavision	1.8	.5	1.0	17	.2%	.1%	.3%	.1%
Land Innovation	1.8	.0	1.8	0	.2%	.0%	.5%	.0%
Mitsui Engineering	1.7	1.2	.4	12	.1%	.2%	.1%	.1%
Sinus Software	1.7	.9	.6	40	.1%	.2%	.2%	.2%
Softdesk	1.5	.0	1.5	0	.1%	.0%	.4%	.0%

(Continued)

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Table 32 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Technical Workstation
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Macao Systems	1.2	.6	.4	13	.1%	.1%	.1%	.1%
Other Companies	5.3	1.5	3.2	156	.5%	.3%	.9%	.7%
All Companies	1,148.7	514.6	360.8	22,419	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	642.6	289.9	158.8	13,905	55.9%	56.3%	44.0%	62.0%
All Asian-Based Companies	279.8	163.7	77.2	4,853	24.4%	31.8%	21.4%	21.6%
All European-Based Companies	226.4	61.0	124.8	3,661	19.7%	11.9%	34.6%	16.3%
All Hardware Companies	195.1	174.4	.3	8,847	17.0%	33.9%	.1%	39.5%
All Turnkey & SW Companies	953.7	340.2	360.5	13,572	83.0%	66.1%	99.9%	60.5%

Source: Dataquest (February 1994)

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Table 33
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Host-Dependent
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
IBM	49.1	30.6	7.4	649	27.9%	31.8%	17.1%	23.3%
Fujitsu	47.3	21.7	18.9	713	26.9%	22.6%	43.8%	25.6%
Digital	15.9	12.4	.0	0	9.0%	12.8%	.0%	.0%
Nihon Unisys	11.9	7.4	1.9	64	6.8%	7.7%	4.4%	2.3%
Kozo Keikaku Engineering	10.1	.0	2.0	0	5.7%	.0%	4.7%	.0%
EA Systems	7.8	.0	7.8	0	4.4%	.0%	18.1%	.0%
Aspen Technology	4.3	.0	2.8	0	2.4%	.0%	6.4%	.0%
Mitsubishi Electric	2.3	1.1	.6	6	1.3%	1.1%	1.5%	.2%
Control Data Systems	1.4	.5	.2	81	.8%	.5%	.5%	2.9%
Hitachi	1.3	.6	.6	312	.7%	.6%	1.3%	11.2%
Hitachi Zosen Info Systems	1.0	.9	.0	0	.6%	1.0%	.0%	.0%
Other Companies	23.4	21.1	1.0	958	13.3%	21.9%	2.4%	34.4%
All Companies	175.7	96.3	43.2	2,783	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	100.5	64.0	18.6	1,680	57.2%	66.5%	43.1%	60.4%
All Asian-Based Companies	74.4	32.0	24.2	1,098	42.3%	33.3%	55.9%	39.4%
All European-Based Companies	.8	.2	.4	6	.4%	.2%	.9%	.2%
All Hardware Companies	37.7	33.0	.1	777	21.5%	34.2%	.1%	27.9%
All Turnkey & SW Companies	137.9	63.4	43.2	2,006	78.5%	65.8%	99.9%	72.1%

Source: Dataquest (February 1994)

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Table 34
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Server
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Digital	33.6	26.2	.0	549	31.4%	44.7%	.0%	31.6%
Intergraph	30.5	7.6	12.2	383	28.5%	13.0%	60.4%	22.1%
IBM	24.3	14.0	5.5	381	22.8%	23.9%	27.4%	21.9%
Sun Microsystems	7.8	6.5	.0	251	7.3%	11.1%	.0%	14.5%
Computervision	3.2	1.1	1.1	45	3.0%	1.8%	5.2%	2.6%
Kozo Keikaku Engineering	2.5	.0	.5	0	2.4%	.0%	2.5%	.0%
Silicon Graphics	1.4	1.2	.0	23	1.3%	2.0%	.0%	1.3%
Han Dataport	1.4	.6	.6	20	1.3%	1.0%	2.7%	1.1%
Hewlett-Packard	1.3	1.1	.0	28	1.2%	1.9%	.0%	1.6%
Other Companies	.8	.4	.4	56	.8%	.7%	1.7%	3.2%
All Companies	106.9	58.7	20.2	1,738	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	102.9	58.0	19.1	1,711	96.3%	98.8%	94.8%	98.5%
All Asian-Based Companies	2.6	.1	.5	7	2.4%	.1%	2.5%	.4%
All European-Based Companies	1.4	.6	.6	20	1.3%	1.0%	2.7%	1.1%
All Hardware Companies	47.0	37.7	.0	943	44.0%	64.2%	.0%	54.2%
All Turnkey & SW Companies	59.8	21.0	20.2	795	56.0%	35.8%	100.0%	45.8%

Source: Dataquest (February 1994)

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Table 35
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Personal Computer
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Autodesk	176.7	.0	176.7	0	18.3%	.0%	43.7%	.0%
Apple Computer	98.6	98.6	.0	24,572	10.2%	19.0%	.0%	15.3%
IBM	77.3	68.5	8.3	20,206	8.0%	13.2%	2.1%	12.6%
Intergraph	51.1	17.7	33.5	6,392	5.3%	3.4%	8.3%	4.0%
Nemetschek	39.5	2.6	33.0	375	4.1%	.5%	8.1%	.2%
NEC	34.8	24.7	7.0	4,490	3.6%	4.8%	1.7%	2.8%
Fujitsu	30.2	26.6	3.7	3,584	3.1%	5.1%	.9%	2.2%
Hewlett-Packard	29.6	26.7	.0	9,377	3.1%	5.1%	.0%	5.8%
Kozo Keikaku Engineering	25.2	1.0	6.5	80	2.6%	.2%	1.6%	.0%
Digital	24.2	23.0	.0	6,470	2.5%	4.4%	.0%	4.0%
Soft-Tech Software Technologies	14.7	1.9	11.4	948	1.5%	.4%	2.8%	.6%
CPU	14.4	4.8	9.6	343	1.5%	.9%	2.4%	.2%
Andor	10.0	2.2	7.4	182	1.0%	.4%	1.8%	.1%
Hochtief	7.6	1.3	3.6	94	.8%	.2%	.9%	.1%
CAD Distribution	6.4	.0	5.8	112	.7%	.0%	1.4%	.1%
Graphisoft Software Dev	6.0	.0	6.0	0	.6%	.0%	1.5%	.0%
Softdesk	5.9	.0	5.9	0	.6%	.0%	1.5%	.0%
International Software Systems	5.6	.0	5.6	0	.6%	.0%	1.4%	.0%
mb Programme	5.3	2.2	2.2	120	.5%	.4%	.5%	.1%
BATISOFT	5.1	.7	2.6	339	.5%	.1%	.6%	.2%
RIB/Bausoftware	5.0	.3	4.2	33	.5%	.1%	1.0%	.0%
Micrografx	4.9	.0	4.9	0	.5%	.0%	1.2%	.0%

(Continued)

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Table 35 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Personal Computer
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Research Machines	4.6	4.6	.0	1,700	.5%	.9%	.0%	1.1%
Isicad CAD/CAM Systeme	4.4	.0	4.4	0	.5%	.0%	1.1%	.0%
Computer Services Consultants	4.2	.0	4.2	0	.4%	.0%	1.0%	.0%
RoboCAD Solutions	4.1	.0	3.2	0	.4%	.0%	.8%	.0%
Sweet's Electronic Publishing	4.0	.0	3.1	0	.4%	.0%	.8%	.0%
Toshiba—NO OEM	3.9	1.9	1.6	291	.4%	.4%	.4%	.2%
Microway	3.8	2.2	1.1	52	.4%	.4%	.3%	.0%
Datagraphic	3.6	1.7	1.4	63	.4%	.3%	.4%	.0%
Mutoh Industries—NO OEM	3.4	1.2	1.9	100	.4%	.2%	.5%	.1%
Tachnodia	3.4	3.0	.0	88	.4%	.6%	.0%	.1%
Hitachi	3.2	1.5	1.4	162	.3%	.3%	.3%	.1%
Foresight Resources	3.1	.0	2.9	0	.3%	.0%	.7%	.0%
Siemens Nixdorf Info systeme	3.0	2.9	.0	528	.3%	.6%	.0%	.3%
Technische Computer Systeme	3.0	.6	2.3	84	.3%	.1%	.6%	.1%
Ziegler Informatics	2.4	.0	2.4	0	.3%	.0%	.6%	.0%
Ground Modelling Systems	2.4	1.2	1.0	223	.2%	.2%	.2%	.1%
Design Automation	2.3	.5	1.8	80	.2%	.1%	.4%	.0%
IMSI	2.2	.0	2.2	0	.2%	.0%	.5%	.0%
Sigma Design	2.1	.4	1.6	224	.2%	.1%	.4%	.1%
Elstree Computing	2.1	.9	1.1	62	.2%	.2%	.3%	.0%
CADKEY	2.1	.0	2.1	0	.2%	.0%	.5%	.0%
Moda CAD	2.1	.4	1.5	20	.2%	.1%	.4%	.0%

(Continued)

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Table 35 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Personal Computer
Region: Worldwide
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Carrier Corporation	2.0	.0	2.0	0	.2%	.0%	.5%	.0%
Research Engineers—Civilsoft	1.9	.0	1.9	0	.2%	.0%	.5%	.0%
Softronics	1.8	.4	1.4	135	.2%	.1%	.3%	.1%
Mitsubishi Electric	1.8	1.2	.6	145	.2%	.2%	.1%	.1%
American Small Business Comp.	1.7	.0	1.7	0	.2%	.0%	.4%	.0%
CADWorks	1.6	.0	1.6	0	.2%	.0%	.4%	.0%
Lamp Software	1.5	.3	1.2	101	.2%	.1%	.3%	.1%
GRAPHSOFT	1.5	.0	1.5	0	.2%	.0%	.4%	.0%
ECOM Associates	1.4	.0	1.4	5	.1%	.0%	.3%	.0%
CAE-link	1.3	.0	1.3	0	.1%	.0%	.3%	.0%
Engineered Software	1.2	.0	1.2	0	.1%	.0%	.3%	.0%
Integrated Computer Graphics	1.2	.4	.6	100	.1%	.1%	.2%	.1%
Mucke Software	1.2	.5	.5	25	.1%	.1%	.1%	.0%
Evolution Computing	1.0	.0	1.0	0	.1%	.0%	.3%	.0%
Other Companies	199.6	191.1	7.7	78,884	20.6%	36.8%	1.9%	49.1%
All Companies	967.8	519.7	404.3	160,789	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	702.7	424.9	271.4	145,876	72.6%	81.8%	67.1%	90.7%
All Asian-Based Companies	133.9	69.3	42.0	9,589	13.8%	13.3%	10.4%	6.0%
All European-Based Companies	131.2	25.5	90.9	5,323	13.6%	4.9%	22.5%	3.3%
All Hardware Companies	435.5	431.4	.0	143,980	45.0%	83.0%	.0%	89.5%
All Turnkey & SW Companies	532.3	88.3	404.3	16,809	55.0%	17.0%	100.0%	10.5%

Source: Dataquest (February 1994)

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Table 36
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: North America
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Intergraph	140.8	42.5	45.8	4,219	20.7%	12.0%	19.9%	5.6%
IBM	89.2	73.4	7.6	11,993	13.1%	20.8%	3.3%	15.8%
Autodesk	88.6	.0	88.6	0	13.0%	.0%	38.5%	.0%
Apple Computer	67.6	67.6	.0	17,795	9.9%	19.2%	.0%	23.4%
Digital	39.4	32.2	.1	3,646	5.8%	9.1%	.0%	4.8%
Hewlett-Packard	28.1	24.7	.0	6,381	4.1%	7.0%	.0%	8.4%
Auto-Trol	20.2	7.2	7.9	258	3.0%	2.0%	3.4%	.3%
Computervision	19.2	4.6	6.4	277	2.8%	1.3%	2.8%	.4%
Silicon Graphics	15.9	14.3	.0	608	2.3%	4.0%	.0%	.8%
Accugraph	11.1	5.0	5.1	653	1.6%	1.4%	2.2%	.9%
Sun Microsystems	11.1	8.9	.0	540	1.6%	2.5%	.0%	.7%
GDS	10.9	4.7	5.1	227	1.6%	1.3%	2.2%	.3%
Aspen Technology	8.5	.0	5.5	0	1.2%	.0%	2.4%	.0%
Isicad CAD/CAM Systeme	7.4	1.4	5.0	58	1.1%	.4%	2.2%	.1%
Softdesk	6.6	.0	6.6	0	1.0%	.0%	2.9%	.0%
EA Systems	4.7	.0	4.7	0	.7%	.0%	2.0%	.0%
Sweet's Electronic Publishing	3.8	.0	3.0	0	.6%	.0%	1.3%	.0%
Integrated Computer Graphics	3.0	1.1	1.7	140	.4%	.3%	.7%	.2%
International Software Systems	2.9	.0	2.9	0	.4%	.0%	1.2%	.0%
Micrografx	2.8	.0	2.8	0	.4%	.0%	1.2%	.0%
Sigma Design	2.6	.5	1.9	149	.4%	.2%	.8%	.2%
Foresight Resources	2.6	.0	2.4	0	.4%	.0%	1.0%	.0%
CAD Centre	2.5	.0	2.0	0	.4%	.0%	.9%	.0%

(Continued)

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Table 36 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
ICAD	2.2	.0	1.8	0	.3%	.0%	.8%	.0%
Research Engineers—Civilsoft	2.1	.0	2.1	0	.3%	.0%	.9%	.0%
Land Innovation	1.8	.0	1.8	0	.3%	.0%	.8%	.0%
IMSI	1.7	.0	1.7	0	.3%	.0%	.7%	.0%
GRAPHSOFT	1.5	.0	1.5	0	.2%	.0%	.7%	.0%
American Small Business Comp.	1.5	.0	1.5	0	.2%	.0%	.6%	.0%
ECOM Associates	1.4	.0	1.4	5	.2%	.0%	.6%	.0%
Moda CAD	1.4	.3	1.0	14	.2%	.1%	.4%	.0%
Technische Computer Systeme	1.2	.2	.9	20	.2%	.1%	.4%	.0%
Graphisoft Software Dev	1.2	.0	1.2	0	.2%	.0%	.5%	.0%
Control Data Systems	1.2	.6	.3	48	.2%	.2%	.1%	.1%
CAE-link	1.2	.0	1.2	0	.2%	.0%	.5%	.0%
CADKEY	1.1	.0	1.1	0	.2%	.0%	.5%	.0%
Kockums Computer Systems	1.1	.3	.7	50	.2%	.1%	.3%	.1%
Carrier Corporation	1.0	.0	1.0	0	.1%	.0%	.4%	.0%
Other Companies	70.4	63.7	5.9	28,933	10.3%	18.0%	2.6%	38.1%
All Companies	681.3	353.1	229.9	76,014	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	673.5	352.1	224.2	75,882	98.9%	99.7%	97.5%	99.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	7.7	1.0	5.7	132	1.1%	.3%	2.5%	.2%
All Hardware Companies	284.5	267.5	.2	69,280	41.8%	75.8%	.1%	91.1%
All Turnkey & SW Companies	396.8	85.6	229.7	6,735	58.2%	24.2%	99.9%	8.9%

Source: Dataquest (February 1994)

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Table 37
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Technical Workstation
Region: North America
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Intergraph	106.9	32.0	26.8	1,377	38.4%	25.9%	35.1%	21.0%
IBM	38.5	31.5	3.1	1,910	13.8%	25.5%	4.1%	29.2%
Auto-Trol	20.2	7.2	7.9	258	7.3%	5.8%	10.4%	3.9%
Silicon Graphics	15.9	14.3	.0	608	5.7%	11.6%	.0%	9.3%
Computervision	15.9	3.7	4.9	218	5.7%	3.0%	6.5%	3.3%
GDS	10.9	4.7	5.1	227	3.9%	3.8%	6.7%	3.5%
Digital	10.2	7.9	.1	406	3.7%	6.4%	.1%	6.2%
Hewlett-Packard	10.0	8.5	.0	528	3.6%	6.9%	.0%	8.1%
Accugraph	9.8	4.7	4.1	382	3.5%	3.8%	5.4%	5.8%
Sun Microsysterns	7.0	5.5	.0	396	2.5%	4.5%	.0%	6.0%
Aspen Technology	6.4	.0	4.1	0	2.3%	.0%	5.4%	.0%
Autodesk	5.3	.0	5.3	0	1.9%	.0%	7.0%	.0%
Isicad CAD/CAM Systeme	5.1	1.4	2.6	58	1.8%	1.1%	3.4%	.9%
CAD Centre	2.5	.0	2.0	0	.9%	.0%	2.6%	.0%
ICAD	2.2	.0	1.8	0	.8%	.0%	2.3%	.0%
Integrated Computer Graphics	1.8	.7	1.0	40	.7%	.5%	1.3%	.6%
Land Innovation	1.8	.0	1.8	0	.6%	.0%	2.3%	.0%
Sigma Design	1.4	.3	1.1	26	.5%	.2%	1.4%	.4%
Softdesk	1.3	.0	1.3	0	.5%	.0%	1.7%	.0%

(Continued)

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Table 37 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Technical Workstation
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Kockums Computer Systems	1.1	.3	.7	50	.4%	.2%	.9%	.8%
Other Companies	4.1	.9	2.6	66	1.5%	.8%	3.4%	1.0%
All Companies	278.3	123.5	76.4	6,551	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	272.4	122.7	72.3	6,462	97.9%	99.4%	94.7%	98.6%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	5.9	.8	4.1	89	2.1%	.6%	5.3%	1.4%
All Hardware Companies	71.6	62.3	.2	3,573	25.7%	50.5%	.2%	54.5%
All Turnkey & SW Companies	206.7	61.2	76.2	2,978	74.3%	49.5%	99.8%	45.5%

Source: Dataquest (February 1994)

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Table 38
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Host-Dependent
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
IBM	13.2	8.2	2.0	179	42.0%	47.0%	23.6%	33.5%
Digital	6.4	5.0	.0	0	20.4%	28.7%	.1%	.0%
EA Systems	4.7	.0	4.7	0	14.9%	.0%	55.7%	.0%
Aspen Technology	2.1	.0	1.4	0	6.8%	.0%	16.4%	.0%
Other Companies	5.0	4.3	.4	356	16.0%	24.4%	4.2%	66.5%
All Companies	31.5	17.5	8.4	535	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	31.5	17.5	8.4	535	100.0%	100.0%	100.0%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	10.8	9.1	.0	161	34.3%	52.1%	.4%	30.1%
All Turnkey & SW Companies	20.7	8.4	8.4	374	65.7%	47.9%	99.6%	69.9%

Source: Dataquest (February 1994)

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Table 39
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Server
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Digital	13.4	10.4	.0	233	32.1%	44.6%	.0%	29.1%
Intergraph	12.7	3.2	5.1	183	30.4%	13.5%	64.7%	22.9%
IBM	7.1	4.4	1.5	135	16.9%	18.6%	19.6%	16.9%
Sun Microsystems	4.1	3.4	.0	144	9.8%	14.5%	.0%	18.0%
Computervision	2.8	.9	.9	40	6.7%	3.9%	11.6%	5.0%
Hewlett-Packard	1.0	.9	.0	23	2.5%	3.6%	.0%	2.9%
Other Companies	.6	.3	.3	41	1.5%	1.1%	4.1%	5.2%
All Companies	41.6	23.3	7.8	800	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	41.6	23.3	7.8	800	100.0%	100.0%	100.0%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	19.9	16.0	.0	449	47.7%	68.4%	.0%	56.1%
All Turnkey & SW Companies	21.8	7.4	7.8	351	52.3%	31.6%	100.0%	43.9%

Source: Dataquest (February 1994)

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Table 40
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Personal Computer
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Autodesk	83.2	.0	83.2	0	25.2%	.0%	60.6%	.0%
Apple Computer	67.6	67.6	.0	17,795	20.5%	35.8%	.0%	26.1%
IBM	30.4	29.4	1.0	9,768	9.2%	15.6%	.7%	14.3%
Intergraph	21.3	7.3	13.9	2,658	6.4%	3.9%	10.1%	3.9%
Hewlett-Packard	17.0	15.3	.0	5,830	5.2%	8.1%	.0%	8.6%
Digital	9.4	9.0	.0	3,006	2.9%	4.7%	.0%	4.4%
Softdesk	5.3	.0	5.3	0	1.6%	.0%	3.8%	.0%
Sweet's Electronic Publishing	3.8	.0	3.0	0	1.2%	.0%	2.2%	.0%
International Software Systems	2.9	.0	2.9	0	.9%	.0%	2.1%	.0%
Micrografx	2.8	.0	2.8	0	.8%	.0%	2.0%	.0%
Foresight Resources	2.6	.0	2.4	0	.8%	.0%	1.7%	.0%
Isicad CAD/CAM Systeme	2.4	.0	2.4	0	.7%	.0%	1.7%	.0%
Research Engineers—Civilsoft	1.9	.0	1.9	0	.6%	.0%	1.4%	.0%
IMSI	1.7	.0	1.7	0	.5%	.0%	1.3%	.0%
GRAPHSOFT	1.5	.0	1.5	0	.5%	.0%	1.1%	.0%
American Small Business Comp.	1.5	.0	1.5	0	.4%	.0%	1.1%	.0%
Moda CAD	1.4	.3	1.0	14	.4%	.1%	.7%	.0%
ECOM Associates	1.4	.0	1.4	5	.4%	.0%	1.0%	.0%
Sigma Design	1.2	.2	.9	123	.4%	.1%	.6%	.2%
Graphisoft Software Dev	1.2	.0	1.2	0	.4%	.0%	.9%	.0%
Integrated Computer Graphics	1.2	.4	.6	100	.4%	.2%	.5%	.1%

(Continued)

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Table 40 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Personal Computer
Region: North America
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
CAE-link	1.2	.0	1.2	0	.4%	.0%	.8%	.0%
CADKEY	1.1	.0	1.1	0	.3%	.0%	.8%	.0%
Carrier Corporation	1.0	.0	1.0	0	.3%	.0%	.7%	.0%
Other Companies	65.1	59.2	5.6	28,828	19.7%	31.4%	4.1%	42.3%
All Companies	329.9	188.7	137.3	68,127	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	328.1	188.6	135.7	68,085	99.4%	99.9%	98.8%	99.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.9	.2	1.6	43	.6%	.1%	1.2%	.1%
All Hardware Companies	182.3	180.1	.0	65,096	55.2%	95.4%	.0%	95.6%
All Turnkey & SW Companies	147.7	8.7	137.3	3,031	44.8%	4.6%	100.0%	4.4%

Source: Dataquest (February 1994)

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Table 41
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	151.9	45.8	49.4	4,319	15.7%	10.3%	13.5%	5.7%
IBM	120.0	91.1	13.5	9,590	12.4%	20.6%	3.7%	12.6%
Nemetschek	73.1	4.8	61.0	468	7.5%	1.1%	16.7%	.6%
Autodesk	66.3	.0	66.3	0	6.8%	.0%	18.1%	.0%
IEZ	52.2	18.3	26.1	1,147	5.4%	4.1%	7.1%	1.5%
Digital	50.7	41.7	.0	3,686	5.2%	9.4%	.0%	4.8%
Computervision	38.1	7.3	13.3	563	3.9%	1.7%	3.6%	.7%
Hewlett-Packard	20.6	18.1	.0	3,441	2.1%	4.1%	.0%	4.5%
Apple Computer	20.4	20.4	.0	4,292	2.1%	4.6%	.0%	5.6%
Siemens Nixdorf Info systeme	18.9	10.3	3.4	818	1.9%	2.3%	.9%	1.1%
Soft-Tech Software Technologies	14.7	1.9	11.4	948	1.5%	.4%	3.1%	1.2%
Han Dataport	12.5	3.8	6.8	280	1.3%	.9%	1.9%	.4%
Microway	12.5	7.5	3.8	138	1.3%	1.7%	1.0%	.2%
Wiechers Datentechnik	12.3	4.3	5.5	296	1.3%	1.0%	1.5%	.4%
CAD Centre	9.2	.0	7.5	0	1.0%	.0%	2.0%	.0%
Silicon Graphics	9.2	8.2	.0	442	.9%	1.8%	.0%	.6%
Moss Systems	8.7	.9	4.8	61	.9%	.2%	1.3%	.1%
Sun Microsystems	8.7	7.0	.0	336	.9%	1.6%	.0%	.4%
Technische Computer Systeme	8.3	1.3	6.3	137	.9%	.3%	1.7%	.2%
Kockums Computer Systems	8.0	2.1	1.4	370	.8%	.5%	.4%	.5%
Hochtief	7.4	1.3	3.5	91	.8%	.3%	1.0%	.1%
RIB/Bausoftware	7.4	.5	6.1	45	.8%	.1%	1.7%	.1%

(Continued)

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Table 41 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
ItalCad	7.4	2.4	2.8	84	.8%	.5%	.8%	.1%
CAD Distribution	6.4	.0	5.8	112	.7%	.0%	1.6%	.1%
Star Informatic	6.2	2.0	3.5	403	.6%	.4%	.9%	.5%
Complansoft CAD	6.2	3.1	3.1	148	.6%	.7%	.8%	.2%
GDS	5.9	2.6	2.8	119	.6%	.6%	.8%	.2%
Isicad CAD/CAM Systeme	5.6	1.0	3.8	45	.6%	.2%	1.0%	.1%
mb Programme	5.3	2.2	2.2	120	.5%	.5%	.6%	.2%
BATISOFT	4.8	.7	2.4	322	.5%	.2%	.7%	.4%
Research Machines	4.6	4.6	.0	1,700	.5%	1.0%	.0%	2.2%
Graphisoft Software Dev	4.4	.0	4.4	0	.5%	.0%	1.2%	.0%
Aspen Technology	4.3	.0	2.8	0	.4%	.0%	.8%	.0%
Computer Services Consultants	4.2	.0	4.2	0	.4%	.0%	1.1%	.0%
RoboCAD Solutions	4.1	.0	3.2	0	.4%	.0%	.9%	.0%
Gable CAD Systems	3.9	2.8	.6	44	.4%	.6%	.2%	.1%
Datagraphic	3.6	1.7	1.4	63	.4%	.4%	.4%	.1%
Triplan	3.5	1.4	1.7	52	.4%	.3%	.5%	.1%
Sener Inginiera y Sistemas	3.2	.0	3.2	0	.3%	.0%	.9%	.0%
Auto-Trol	2.8	1.0	1.1	36	.3%	.2%	.3%	.0%
Assigraph	2.8	.0	2.3	0	.3%	.0%	.6%	.0%
Ziegler Informatics	2.4	.0	2.4	0	.2%	.0%	.7%	.0%
Ground Modelling Systems	2.3	1.2	.9	211	.2%	.3%	.3%	.3%
Lamp Software	2.2	.5	1.6	152	.2%	.1%	.4%	.2%

(Continued)

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Table 41 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Elstree Computing	2.1	.9	1.1	62	.2%	.2%	.3%	.1%
Micrografx	2.1	.0	2.1	0	.2%	.0%	.6%	.0%
Control Data Systems	1.8	.8	.4	72	.2%	.2%	.1%	.1%
Radan Computational	1.8	.6	.9	36	.2%	.1%	.2%	.0%
Softronics	1.8	.4	1.4	135	.2%	.1%	.4%	.2%
Matra Datavision	1.7	.5	.9	16	.2%	.1%	.3%	.0%
Sinus Software	1.7	.9	.6	40	.2%	.2%	.2%	.1%
MEDESIGN	1.7	.5	.6	18	.2%	.1%	.2%	.0%
Macao Systems	1.6	.8	.6	16	.2%	.2%	.2%	.0%
Mucke Software	1.2	.5	.5	25	.1%	.1%	.1%	.0%
ARKTEC	1.1	.1	.9	44	.1%	.0%	.2%	.1%
Sigma Design	1.1	.2	.8	62	.1%	.0%	.2%	.1%
CADKEY	1.0	.0	1.0	0	.1%	.0%	.3%	.0%
Other Companies	122.8	113.4	8.0	40,461	12.7%	25.6%	2.2%	53.2%
All Companies	970.4	443.3	366.1	76,067	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	629.8	358.1	163.1	67,405	64.9%	80.8%	44.6%	88.6%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	340.6	85.2	203.0	8,663	35.1%	19.2%	55.4%	11.4%
All Hardware Companies	290.4	272.5	.2	62,969	29.9%	61.5%	.0%	82.8%
All Turnkey & SW Companies	680.0	170.8	365.9	13,099	70.1%	38.5%	100.0%	17.2%

Source: Dataquest (February 1994)

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Table 42
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Technical Workstation
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	115.3	34.5	28.9	1,303	24.2%	19.4%	16.5%	14.4%
IBM	54.8	41.8	5.9	2,029	11.5%	23.5%	3.4%	22.4%
IEZ	52.2	18.3	26.1	1,147	11.0%	10.3%	14.9%	12.7%
Computervision	37.9	7.3	13.3	560	7.9%	4.1%	7.6%	6.2%
Nemetschek	33.6	2.2	28.1	93	7.1%	1.2%	16.1%	1.0%
Siemens Nixdorf Info systeme	15.9	7.4	3.4	290	3.3%	4.2%	1.9%	3.2%
Digital	13.5	10.5	.0	429	2.8%	5.9%	.0%	4.8%
Wiechers Datentechnik	12.3	4.3	5.5	296	2.6%	2.4%	3.2%	3.3%
Han Dataport	10.3	3.0	5.8	235	2.2%	1.7%	3.3%	2.6%
Hewlett-Packard	9.7	8.2	.0	410	2.0%	4.6%	.0%	4.5%
CAD Centre	9.2	.0	7.5	0	1.9%	.0%	4.3%	.0%
Moss Systems	8.7	.9	4.8	61	1.8%	.5%	2.7%	.7%
Microway	8.7	5.3	2.7	86	1.8%	2.9%	1.5%	1.0%
Kockums Computer Systems	8.0	2.1	1.4	370	1.7%	1.2%	.8%	4.1%
Silicon Graphics	7.8	7.0	.0	419	1.6%	3.9%	.0%	4.6%
ItalCad	7.4	2.4	2.8	84	1.5%	1.3%	1.6%	.9%
Complansoft CAD	6.2	3.1	3.1	148	1.3%	1.7%	1.8%	1.6%
GDS	5.9	2.6	2.8	119	1.2%	1.4%	1.6%	1.3%
Technische Computer Systeme	5.7	.8	4.3	64	1.2%	.5%	2.5%	.7%
Star Informatic	5.6	1.3	3.5	222	1.2%	.8%	2.0%	2.5%
Sun Microsystems	5.2	4.1	.0	237	1.1%	2.3%	.0%	2.6%
Autodesk	4.0	.0	4.0	0	.8%	.0%	2.3%	.0%

(Continued)

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Table 42 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Technical Workstation
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Gable CAD Systems	3.9	2.8	.6	44	.8%	1.5%	.3%	.5%
Isicad CAD/CAM Systeme	3.8	1.0	2.0	45	.8%	.6%	1.1%	.5%
Triplan	3.5	1.4	1.7	52	.7%	.8%	1.0%	.6%
Sener Inginiera y Sistemaus	3.2	.0	3.2	0	.7%	.0%	1.8%	.0%
Aspen Technology	3.2	.0	2.1	0	.7%	.0%	1.2%	.0%
Auto-Trol	2.8	1.0	1.1	36	.6%	.6%	.6%	.4%
Assigraph	2.6	.0	2.1	0	.5%	.0%	1.2%	.0%
RIB/Bausoftware	2.4	.2	1.9	12	.5%	.1%	1.1%	.1%
Radan Computational	1.8	.6	.9	34	.4%	.3%	.5%	.4%
Matra Datavision	1.7	.5	.9	16	.4%	.3%	.5%	.2%
Sinus Software	1.7	.9	.6	40	.4%	.5%	.3%	.4%
MEDESIGN	1.7	.5	.6	18	.4%	.3%	.3%	.2%
Macao Systems	1.2	.6	.4	13	.2%	.4%	.2%	.1%
Control Data Systems	1.1	.6	.3	28	.2%	.3%	.2%	.3%
Other Companies	4.4	1.1	2.7	99	.9%	.6%	1.5%	1.1%
All Companies	476.6	178.1	174.8	9,040	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	266.6	118.9	61.5	5,645	55.9%	66.8%	35.2%	62.4%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	210.0	59.2	113.3	3,395	44.1%	33.2%	64.8%	37.6%
All Hardware Companies	71.7	62.4	.1	3,126	15.0%	35.0%	.1%	34.6%
All Turnkey & SW Companies	404.9	115.7	174.6	5,914	85.0%	65.0%	99.9%	65.4%

Source: Dataquest (February 1994)

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Table 43
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Host-Dependent
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
IBM	25.2	15.8	3.8	341	53.7%	48.9%	65.0%	44.6%
Digital	7.8	6.1	.0	0	16.6%	18.8%	.0%	.0%
Aspen Technology	1.1	.0	.7	0	2.3%	.0%	11.7%	.0%
Other Companies	12.9	10.4	1.4	423	27.4%	32.3%	23.3%	55.4%
All Companies	46.9	32.4	5.9	764	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	46.2	32.1	5.5	758	98.4%	99.3%	93.4%	99.3%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.8	.2	.4	6	1.6%	.7%	6.6%	.7%
All Hardware Companies	18.4	16.1	.0	375	39.1%	49.6%	.3%	49.1%
All Turnkey & SW Companies	28.6	16.3	5.9	389	60.9%	50.4%	99.7%	50.9%

Source: Dataquest (February 1994)

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Table 44
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Server
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Digital	16.8	13.1	.0	263	34.0%	46.2%	.0%	35.4%
Intergraph	13.7	3.4	5.5	148	27.6%	12.0%	61.3%	20.0%
IBM	12.5	7.1	2.8	182	25.2%	24.9%	31.6%	24.5%
Sun Microsystems	3.5	2.9	.0	98	7.0%	10.2%	.0%	13.2%
Silicon Graphics	1.4	1.2	.0	23	2.8%	4.1%	.0%	3.2%
Han Dataport	1.4	.6	.6	20	2.7%	2.1%	6.2%	2.7%
Other Companies	.3	.1	.1	8	.6%	.5%	.9%	1.0%
All Companies	49.5	28.4	8.9	742	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	48.1	27.8	8.4	722	97.3%	97.9%	93.8%	97.3%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	1.4	.6	.6	20	2.7%	2.1%	6.2%	2.7%
All Hardware Companies	23.0	18.4	.0	416	46.6%	64.7%	.0%	56.1%
All Turnkey & SW Companies	26.4	10.0	8.9	325	53.4%	35.3%	100.0%	43.9%

Source: Dataquest (February 1994)

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Table 45
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Personal Computer
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Autodesk	62.3	.0	62.3	0	15.7%	.0%	35.3%	.0%
Nemetschek	39.5	2.6	33.0	375	9.9%	1.3%	18.7%	.6%
IBM	27.5	26.4	1.0	7,039	6.9%	12.9%	.6%	10.7%
Intergraph	23.0	7.9	15.0	2,868	5.8%	3.9%	8.5%	4.4%
Apple Computer	20.4	20.4	.0	4,292	5.1%	10.0%	.0%	6.6%
Soft-Tech Software Technologies	14.7	1.9	11.4	948	3.7%	.9%	6.4%	1.4%
Digital	12.6	12.0	.0	2,994	3.2%	5.9%	.0%	4.6%
Hewlett-Packard	11.0	9.9	.0	3,032	2.8%	4.8%	.0%	4.6%
Hochtief	7.3	1.2	3.5	90	1.8%	.6%	2.0%	.1%
CAD Distribution	6.4	.0	5.8	112	1.6%	.0%	3.3%	.2%
mb Programme	5.3	2.2	2.2	120	1.3%	1.1%	1.2%	.2%
RIB/Bausoftware	5.0	.3	4.2	33	1.3%	.2%	2.4%	.1%
BATISOFT	4.8	.7	2.4	322	1.2%	.3%	1.4%	.5%
Research Machines	4.6	4.6	.0	1,700	1.2%	2.2%	.0%	2.6%
Graphisoft Software Dev	4.4	.0	4.4	0	1.1%	.0%	2.5%	.0%
Computer Services Consultants	4.2	.0	4.2	0	1.1%	.0%	2.4%	.0%
RoboCAD Solutions	4.1	.0	3.2	0	1.0%	.0%	1.8%	.0%
Microway	3.8	2.2	1.1	52	1.0%	1.1%	.6%	.1%
Datagraphic	3.6	1.7	1.4	63	.9%	.9%	.8%	.1%
Siemens Nixdorf Info systeme	3.0	2.9	.0	528	.8%	1.4%	.0%	.8%
Technische Computer Systeme	2.6	.5	2.0	73	.6%	.2%	1.1%	.1%

(Continued)

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Table 45 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Personal Computer
Region: Europe
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Ziegler Informatics	2.4	.0	2.4	0	.6%	.0%	1.4%	.0%
Ground Modelling Systems	2.3	1.2	.9	211	.6%	.6%	.5%	.3%
Elstree Computing	2.1	.9	1.1	62	.5%	.4%	.6%	.1%
Micrografx	2.1	.0	2.1	0	.5%	.0%	1.2%	.0%
Isicad CAD/CAM Systeme	1.8	.0	1.8	0	.5%	.0%	1.0%	.0%
Softronics	1.8	.4	1.4	135	.4%	.2%	.8%	.2%
Lamp Software	1.5	.3	1.2	101	.4%	.1%	.7%	.2%
Mucke Software	1.2	.5	.5	25	.3%	.2%	.3%	.0%
CADKEY	1.0	.0	1.0	0	.3%	.0%	.6%	.0%
Other Companies	111.4	103.8	7.0	40,348	28.0%	50.8%	4.0%	61.6%
All Companies	397.3	204.4	176.5	65,522	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	268.9	179.2	87.8	60,280	67.7%	87.7%	49.7%	92.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	128.4	25.2	88.7	5,242	32.3%	12.3%	50.3%	8.0%
All Hardware Companies	177.3	175.6	.0	59,052	44.6%	85.9%	.0%	90.1%
All Turnkey & SW Companies	220.0	28.7	176.5	6,470	55.4%	14.1%	100.0%	9.9%

Source: Dataquest (February 1994)

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Table 46
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Fujitsu	151.8	88.1	47.3	5,982	21.9%	23.9%	22.1%	19.6%
NEC	64.5	43.2	15.6	5,325	9.3%	11.7%	7.3%	17.5%
Kozo Keikaku Engineering	50.4	2.3	12.8	93	7.3%	.6%	6.0%	.3%
Nihon Unisys	47.8	27.1	11.6	267	6.9%	7.4%	5.4%	.9%
IBM	38.7	22.7	10.8	3,233	5.6%	6.2%	5.0%	10.6%
Autodesk	30.1	.0	30.1	0	4.3%	.0%	14.1%	.0%
Tachnodia	26.1	21.2	.3	344	3.8%	5.8%	.1%	1.1%
Intergraph	25.6	7.8	8.3	728	3.7%	2.1%	3.9%	2.4%
Toshiba—NO OEM	19.4	9.7	7.8	464	2.8%	2.6%	3.6%	1.5%
Hitachi	18.4	8.7	7.9	750	2.6%	2.4%	3.7%	2.5%
Mitsubishi Electric	17.5	13.7	2.2	277	2.5%	3.7%	1.0%	.9%
Computervision	16.6	6.0	3.1	74	2.4%	1.6%	1.5%	.2%
Sony	14.9	14.9	.0	737	2.1%	4.0%	.0%	2.4%
CPU	14.4	4.8	9.6	343	2.1%	1.3%	4.5%	1.1%
Mutoh Industries—NO OEM	11.3	4.0	6.2	217	1.6%	1.1%	2.9%	.7%
Silicon Graphics	10.2	10.2	.0	325	1.5%	2.8%	.0%	1.1%
Andor	10.0	2.2	7.4	182	1.4%	.6%	3.5%	.6%
Century Research Center	9.9	5.2	3.7	69	1.4%	1.4%	1.7%	.2%
Hitachi Zosen Info Systems	9.1	7.7	.4	81	1.3%	2.1%	.2%	.3%
Digital	8.5	7.0	.0	542	1.2%	1.9%	.0%	1.8%
GDS	8.3	4.2	3.3	148	1.2%	1.1%	1.5%	.5%
Hewlett-Packard	7.8	6.6	.0	504	1.1%	1.8%	.0%	1.7%

(Continued)

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Table 46 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
INS Engineering	7.5	3.7	3.8	34	1.1%	1.0%	1.8%	.1%
Apple Computer	5.7	5.7	.0	1,191	.8%	1.5%	.0%	3.9%
Uchida Yoko	5.2	3.1	1.9	145	.8%	.8%	.9%	.5%
Toyo Information Systems—NO OEM	4.6	2.7	1.4	51	.7%	.7%	.7%	.2%
Aspen Technology	4.3	.0	2.8	0	.6%	.0%	1.3%	.0%
Kockums Computer Systems	3.0	.8	1.9	140	.4%	.2%	.9%	.5%
Adam Net	2.9	.4	1.8	6	.4%	.1%	.8%	.0%
CAD Centre	2.5	.0	2.0	0	.4%	.0%	.9%	.0%
EA Systems	2.3	.0	2.3	0	.3%	.0%	1.1%	.0%
Design Automation	2.3	.5	1.8	80	.3%	.1%	.8%	.3%
Mitsui Engineering	1.9	1.3	.4	15	.3%	.4%	.2%	.0%
Sun Microsystems	1.5	1.2	.0	64	.2%	.3%	.0%	.2%
Moss Systems	1.0	.0	.7	0	.1%	.0%	.3%	.0%
Auto-Trol	1.0	.4	.4	13	.1%	.1%	.2%	.0%
Other Companies	36.7	31.3	4.5	8,028	5.3%	8.5%	2.1%	26.4%
All Companies	693.6	368.1	214.1	30,454	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	195.1	101.8	64.9	14,701	28.1%	27.7%	30.3%	48.3%
All Asian-Based Companies	490.6	265.1	143.9	15,547	70.7%	72.0%	67.2%	51.0%
All European-Based Companies	7.9	1.2	5.4	207	1.1%	.3%	2.5%	.7%
All Hardware Companies	123.8	120.5	.0	17,849	17.8%	32.7%	.0%	58.6%
All Turnkey & SW Companies	569.8	247.6	214.1	12,605	82.2%	67.3%	100.0%	41.4%

Source: Dataquest (February 1994)

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Table 47
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Technical Workstation
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Fujitsu	74.4	39.8	24.7	1,686	20.2%	19.5%	24.2%	26.4%
Nihon Unisys	35.8	19.7	9.7	203	9.7%	9.7%	9.5%	3.2%
NEC	29.7	18.4	8.6	836	8.1%	9.0%	8.4%	13.1%
Tachnodia	22.7	18.2	.2	256	6.2%	8.9%	.2%	4.0%
Intergraph	19.4	5.8	4.9	220	5.3%	2.9%	4.8%	3.4%
Computervision	16.4	6.0	2.9	74	4.5%	2.9%	2.8%	1.2%
Toshiba—NO OEM	15.5	7.8	6.2	172	4.2%	3.8%	6.1%	2.7%
Sony	14.9	14.9	.0	737	4.0%	7.3%	.0%	11.5%
Hitachi	13.9	6.5	6.0	275	3.8%	3.2%	5.9%	4.3%
Mitsubishi Electric	13.5	11.5	1.0	127	3.7%	5.6%	.9%	2.0%
Kozo Keikaku Engineering	12.6	1.3	3.8	13	3.4%	.6%	3.7%	.2%
Silicon Graphics	10.2	10.2	.0	325	2.8%	5.0%	.0%	5.1%
Century Research Center	9.9	5.2	3.7	69	2.7%	2.5%	3.6%	1.1%
GDS	8.3	4.2	3.3	148	2.3%	2.1%	3.2%	2.3%
Hitachi Zosen Info Systems	8.1	6.8	.4	81	2.2%	3.3%	.4%	1.3%
Mutoh Industries—NO OEM	7.9	2.8	4.3	117	2.2%	1.4%	4.3%	1.8%
IBM	7.4	3.7	2.1	156	2.0%	1.8%	2.0%	2.4%
INS Engineering	6.8	3.4	3.5	19	1.9%	1.6%	3.4%	.3%
Hewlett-Packard	6.7	5.7	.0	286	1.8%	2.8%	.0%	4.5%
Uchida Yoko	4.7	2.8	1.7	118	1.3%	1.4%	1.7%	1.9%
Toyo Information Systems—NO OEM	4.0	2.4	1.3	48	1.1%	1.2%	1.3%	.8%

(Continued)

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Table 47 (Continued)
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Technical Workstation
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Aspen Technology	3.2	.0	2.1	0	.9%	.0%	2.0%	.0%
Kockums Computer Systems	3.0	.8	1.9	140	.8%	.4%	1.8%	2.2%
Adam Net	2.9	.4	1.8	6	.8%	.2%	1.8%	.1%
Autodesk	2.6	.0	2.6	0	.7%	.0%	2.5%	.0%
CAD Centre	2.5	.0	2.0	0	.7%	.0%	2.0%	.0%
Digital	2.2	1.7	.0	65	.6%	.8%	.0%	1.0%
Mitsui Engineering	1.7	1.2	.4	12	.5%	.6%	.3%	.2%
Sun Microsystems	1.3	1.0	.0	58	.3%	.5%	.0%	.9%
Moss Systems	1.0	.0	.7	0	.3%	.0%	.7%	.0%
Auto-Trol	1.0	.4	.4	13	.3%	.2%	.4%	.2%
Other Companies	3.7	1.4	2.0	136	1.0%	.7%	1.9%	2.1%
All Companies	368.1	203.9	101.9	6,397	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	80.8	39.2	19.6	1,370	21.9%	19.2%	19.2%	21.4%
All Asian-Based Companies	279.8	163.7	77.2	4,853	76.0%	80.3%	75.8%	75.9%
All European-Based Companies	7.5	1.1	5.1	174	2.0%	.5%	5.0%	2.7%
All Hardware Companies	48.7	46.9	.0	2,004	13.2%	23.0%	.0%	31.3%
All Turnkey & SW Companies	319.4	157.0	101.9	4,393	86.8%	77.0%	100.0%	68.7%

Source: *Dataquest (February 1994)*

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Table 48
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Host-Dependent
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Fujitsu	47.3	21.7	18.9	713	49.5%	48.0%	65.8%	49.0%
Nihon Unisys	11.9	7.4	1.9	64	12.5%	16.3%	6.6%	4.4%
Kozo Keikaku Engineering	10.1	.0	2.0	0	10.5%	.0%	7.0%	.0%
IBM	9.5	5.9	1.4	114	10.0%	13.0%	4.9%	7.8%
EA Systems	2.3	.0	2.3	0	2.4%	.0%	8.1%	.0%
Mitsubishi Electric	2.3	1.1	.6	6	2.4%	2.4%	2.2%	.4%
Digital	1.4	1.1	.0	0	1.5%	2.4%	.0%	.0%
Hitachi	1.3	.6	.6	312	1.3%	1.3%	1.9%	21.5%
Aspen Technology	1.1	.0	.7	0	1.1%	.0%	2.4%	.0%
Hitachi Zosen Info Systems	1.0	.9	.0	0	1.1%	2.0%	.0%	.0%
Other Companies	7.3	6.6	.3	245	7.7%	14.5%	.9%	16.8%
All Companies	95.5	45.3	28.7	1,454	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	21.1	13.2	4.6	356	22.1%	29.2%	15.9%	24.5%
All Asian-Based Companies	74.4	32.0	24.2	1,098	77.9%	70.8%	84.1%	75.5%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	8.0	7.3	.0	230	8.3%	16.1%	.0%	15.8%
All Turnkey & SW Companies	87.6	38.0	28.7	1,224	91.7%	83.9%	100.0%	84.2%

Source: Dataquest (February 1994)

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Table 49
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Server
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
IBM	4.2	2.2	1.1	56	33.9%	40.4%	42.4%	38.9%
Digital	2.8	2.2	.0	43	22.8%	40.2%	.0%	29.6%
Kozo Keikaku Engineering	2.5	.0	.5	0	20.2%	.0%	20.0%	.0%
Intergraph	2.3	.6	.9	25	18.5%	10.5%	37.2%	17.4%
Other Companies	.6	.5	.0	20	4.6%	8.9%	.4%	14.1%
All Companies	12.5	5.5	2.5	144	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	9.9	5.4	2.0	137	79.2%	98.6%	80.0%	95.3%
All Asian-Based Companies	2.6	.1	.5	7	20.8%	1.4%	20.0%	4.7%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	3.4	2.7	.0	62	27.3%	49.1%	.0%	43.3%
All Turnkey & SW Companies	9.1	2.8	2.5	81	72.7%	50.9%	100.0%	56.7%

Source: Dataquest (February 1994)

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Table 50
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Personal Computer
Region: Asia
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
NEC	34.8	24.7	7.0	4,490	16.0%	21.8%	8.6%	20.0%
Fujitsu	30.2	26.6	3.7	3,584	13.9%	23.4%	4.5%	16.0%
Autodesk	27.6	.0	27.6	0	12.7%	.0%	34.1%	.0%
Kozo Keikaku Engineering	25.2	1.0	6.5	80	11.6%	.9%	8.1%	.4%
IBM	17.5	10.9	6.2	2,908	8.1%	9.6%	7.7%	12.9%
CPU	14.4	4.8	9.6	343	6.6%	4.2%	11.9%	1.5%
Andor	10.0	2.2	7.4	182	4.6%	1.9%	9.2%	.8%
Apple Computer	5.7	5.7	.0	1,191	2.6%	5.0%	.0%	5.3%
Toshiba—NO OEM	3.9	1.9	1.6	291	1.8%	1.7%	1.9%	1.3%
Intergraph	3.9	1.3	2.5	483	1.8%	1.2%	3.1%	2.2%
Mutoh Industries—NO OEM	3.4	1.2	1.9	100	1.6%	1.1%	2.3%	.4%
Tachnodia	3.4	3.0	.0	88	1.6%	2.7%	.0%	.4%
Hitachi	3.2	1.5	1.4	162	1.5%	1.3%	1.7%	.7%
Design Automation	2.3	.5	1.8	80	1.1%	.4%	2.2%	.4%
Digital	2.1	2.0	.0	435	.9%	1.7%	.0%	1.9%
Mitsubishi Electric	1.8	1.2	.6	145	.8%	1.0%	.7%	.6%
Other Companies	28.3	24.9	3.2	7,898	13.0%	22.0%	4.0%	35.2%
All Companies	217.5	113.4	81.0	22,460	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	83.3	44.0	38.7	12,838	38.3%	38.8%	47.8%	57.2%
All Asian-Based Companies	133.9	69.3	42.0	9,589	61.5%	61.1%	51.9%	42.7%
All European-Based Companies	.4	.1	.2	33	.2%	.1%	.3%	.1%
All Hardware Companies	63.8	63.6	.0	15,552	29.3%	56.1%	.0%	69.2%
All Turnkey & SW Companies	153.8	49.8	81.0	6,908	70.7%	43.9%	100.0%	30.8%

Source: Dataquest (February 1994)

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Table 51
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: All Platforms
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Market Share: Total Factory Revenue	Market Share: Hardware Revenue	Market Share: Software Revenue	Market Share: Hardware Units Shipped
Intergraph	20.3	6.1	6.6	609	37.8%	24.7%	35.8%	11.7%
IBM	6.7	5.3	.6	632	12.4%	21.3%	3.3%	12.2%
Apple Computer	4.9	4.9	.0	1,293	9.1%	19.8%	.0%	24.9%
Autodesk	3.8	.0	3.8	0	7.0%	.0%	20.5%	.0%
International Software Systems	2.8	.0	2.8	0	5.1%	.0%	15.0%	.0%
CAD Centre	2.3	.0	1.9	0	4.3%	.0%	10.2%	.0%
Digital	1.6	1.3	.0	72	3.0%	5.1%	.0%	1.4%
Computervision	1.5	.5	.3	31	2.8%	2.1%	1.7%	.6%
GDS	1.4	.6	.6	28	2.5%	2.4%	3.5%	.5%
Hewlett-Packard	1.1	1.0	.0	311	2.0%	3.8%	.0%	6.0%
Other Companies	7.5	5.2	1.9	2,217	14.0%	20.8%	10.0%	42.7%
All Companies	53.8	24.9	18.4	5,193	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	50.3	24.8	15.8	5,184	93.5%	99.7%	85.8%	99.8%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	3.5	.1	2.6	8	6.5%	.3%	14.2%	.2%
All Hardware Companies	16.7	16.0	.0	4,449	30.9%	64.3%	.0%	85.7%
All Turnkey & SW Companies	37.2	8.9	18.4	743	69.1%	35.7%	100.0%	14.3%

Source: Dataquest (February 1994)

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Table 52
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Technical Workstation
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Intergraph	15.4	4.6	3.9	199	59.9%	51.0%	49.9%	46.2%
IBM	3.0	2.4	.2	118	11.8%	26.9%	3.1%	27.4%
CAD Centre	2.3	.0	1.9	0	9.0%	.0%	24.2%	.0%
GDS	1.4	.6	.6	28	5.3%	6.5%	8.3%	6.6%
Computervision	1.3	.5	.2	28	4.9%	5.0%	2.8%	6.4%
Other Companies	2.3	1.0	.9	58	9.1%	10.6%	11.6%	13.4%
All Companies	25.7	9.1	7.7	430	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	22.8	9.0	5.5	428	88.5%	99.8%	71.0%	99.4%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	3.0	.0	2.2	3	11.5%	.2%	29.0%	.6%
All Hardware Companies	3.1	2.8	.0	143	12.2%	30.7%	.0%	33.3%
All Turnkey & SW Companies	22.6	6.3	7.7	287	87.8%	69.3%	100.0%	66.7%

Source: Dataquest (February 1994)

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Table 53
1993 CAD/CAM/CAE/GIS Market Share

Applications: AEC
Platform: Host-Dependent
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
IBM	1.1	.7	.2	15	64.4%	56.6%	89.5%	49.2%
Digital	.3	.2	.0	0	15.5%	17.2%	.0%	.0%
Other Companies	.3	.3	.0	16	20.1%	26.2%	10.5%	50.8%
All Companies	1.7	1.2	.2	31	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	1.7	1.2	.2	31	100.0%	100.0%	100.0%	99.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.1%
All Hardware Companies	.6	.5	.0	12	34.5%	43.4%	.0%	38.2%
All Turnkey & SW Companies	1.1	.7	.2	19	65.5%	56.6%	100.0%	61.8%

Source: Dataquest (February 1994)

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Table 54
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Server
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Intergraph	1.8	.5	.7	26	55.5%	32.9%	78.5%	51.0%
IBM	.6	.3	.1	8	17.6%	24.3%	12.9%	16.3%
Other Companies	.9	.6	.1	17	27.0%	42.9%	8.6%	32.7%
All Companies	3.3	1.4	.9	52	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	3.3	1.4	.9	52	100.0%	100.0%	100.0%	100.0%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All Hardware Companies	.7	.6	.0	15	22.4%	43.6%	.0%	29.0%
All Turnkey & SW Companies	2.6	.8	.9	37	77.6%	56.4%	100.0%	71.0%

Source: Dataquest (February 1994)

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Table 55
1993 CAD/CAM/CAE/GIS Market Share

Application: AEC
Platform: Personal Computer
Region: Rest of World
Units: Millions of U.S. Dollars/Actual Units

					Market Share			
Company	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped	Total Factory Revenue	Hardware Revenue	Software Revenue	Hardware Units Shipped
Apple Computer	4.9	4.9	.0	1,293	21.3%	37.2%	.0%	27.6%
Autodesk	3.5	.0	3.5	0	15.4%	.0%	37.0%	.0%
Intergraph	3.1	1.1	2.0	384	13.3%	8.0%	21.0%	8.2%
International Software Systems	2.8	.0	2.8	0	12.0%	.0%	28.9%	.0%
IBM	1.9	1.8	.1	491	8.4%	13.9%	.8%	10.5%
Other Companies	6.8	5.4	1.2	2,512	29.6%	40.8%	12.2%	53.7%
All Companies	23.0	13.2	9.6	4,679	100.0%	100.0%	100.0%	100.0%
All N.A.-Based Companies	22.5	13.2	9.2	4,674	97.6%	99.5%	96.0%	99.9%
All Asian-Based Companies	.0	.0	.0	0	.0%	.0%	.0%	.0%
All European-Based Companies	.6	.1	.4	6	2.4%	.5%	4.0%	.1%
All Hardware Companies	12.2	12.1	.0	4,279	52.8%	91.4%	.0%	91.4%
All Turnkey & SW Companies	10.9	1.1	9.6	400	47.2%	8.6%	100.0%	8.6%

Source: Dataquest (February 1994)

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Note: All tables show estimated data.

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CAD/CAM/CAE and GIS AEC and GIS Forecast

Fluctuating exchange rates masked true market performance in the 1993 CAD/CAM/CAE and GIS market. Japanese CAD/CAM/CAE and GIS total revenue grew a surprising 3.3 percent from 1992 to 1993 when measured in U.S. dollars, contrary to what would be expected in the worst recession Japan has experienced in 50 years. However, the dollar depreciated against the yen at a rate of 12.3 percent so that when measured in yen, Japanese CAD/CAM/CAE and GIS total revenue declined 9.4 percent from 1992 to 1993.

In the meantime, European CAD/CAM/CAE and GIS total revenue declined 1.4 percent from 1992 to 1993 when measured in U.S. dollars. With the dollar appreciating 10.0 percent against the ECU, European CAD/CAM/CAE and GIS total revenue grew 9.9 percent from 1992 to 1993 when measured in ECU. Table 1 shows the dramatic impact that currency fluctuation has on the CAD/CAM/CAE and GIS.

The yen has been strengthening against the dollar for the past three years, changing in 1993 at a rate twice that of previous years. And the end is not in sight. In contrast, Hong Kong and Singapore had relatively stable currency during 1993, while the currencies in China, Korea, and Taiwan weakened against the dollar. In Europe, 1993 was a year for weakening of local currencies against the dollar after having currencies strengthened against the dollar in 1992.

The early indications are that currencies will follow the same pattern in each country for the coming year (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 February exchange rate will apply for all future months of 1994.

Dataquest's forecast is based upon the early market share data, gathered primarily before the end of 1993. This data is being verified and updated and will be available May 31 as the Market Share Update. Dataquest will then perform an updated forecast to include country-level information and in-depth analysis. This Forecast Update will be available July 31.

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.

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

	1992	1993	Forecast 1994	Growth (%) 1992-1993	Growth (%) 1993-1994
Europe (U.S.$ Million)					
Software Revenue	1,708.6	1,755.2	1,863	2.7	6.1
Hardware Revenue	2,778.1	2,628.5	2,624	-5.4	-0.2
Service Revenue	1,087.7	1,118.8	1,133	2.9	1.3
Total Factory Revenue	5,582.6	5,502.6	5,620	-1.4	2.1
ECU/U.S.$ Exchange Rate	*0.7686*	*0.8566*	*0.8879**	*11.4*	*3.7*
Europe (ECU Million)					
Software Revenue	1,313.2	1,503.5	1,654.0	14.5	10.0
Hardware Revenue	2,135.2	2,251.6	2,330	5.4	3.5
Service Revenue	836.0	958.4	1,006	14.6	5.0
Total Factory Revenue	4,290.8	4,713.5	4,990	9.9	5.9
Japan (U.S.$ Million)					
Software Revenue	1,316.5	1,435.1	1,514	9.0	5.5
Hardware Revenue	2,477.7	2,427.8	2,446	-2.0	0.7
Service Revenue	601.1	676.8	702	12.6	3.7
Total Factory Revenue	4,395.3	4,539.6	4,662	3.3	2.7
Yen/U.S.$ Exchange Rate	*126.34*	*110.85*	*106.54**	*-12.3*	*-3.9*
Japan (Yen Million)					
Software Revenue	166,328	159,076	161,314	-4.4	1.4
Hardware Revenue	313,036	269,117	260,569	-14.0	-3.2
Service Revenue	75,947	75,022	74,792	-1.2	-0.3
Total Factory Revenue	555,317	503,216	496,672	-9.4	-1.3
North America (U.S.$ Million)					
Software Revenue	1,629.3	1,804.5	2,008	10.8	11.3
Hardware Revenue	2,920.2	2,951.1	3,184	1.1	7.9
Service Revenue	931.8	1,039.0	1,133	11.5	9.0
Total Factory Revenue	5,482.4	5,794.6	6,325	5.7	9.1
Worldwide (U.S.$ Million)					
Software Revenue	4,835.9	5,189.2	5,614	7.3	8.2
Hardware Revenue	8,501.2	8,323.4	8,607	-2.1	3.4
Service Revenue	2,739.0	2,968.9	3,122	8.4	5.2
Total Factory Revenue	16,086.0	16,481.3	17,342	2.5	5.2

*1994 currency calculated by projecting February exchange rate to end of year.

Source: Dataquest (April 1994)

The CAD/CAM/CAE and GIS *Dataquest Perspective*, dated April 18, 1994, contains additional tables and analysis and is a companion piece to this book.

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Table 2
Exchange Rates

Country	Currency	Actual 1990	Actual 1991	Actual 1992	Actual 1993	Current 1994	Year-to-Year Change (Percent) 1990-1991	1991-1992	1992-1993	1993-1994
European Community	ECU		0.8079	0.7686	0.8566	0.8879	-	-5	11	4
Belgium	Franc	33.31	34.01	31.94	34.61	35.46	2	-6	8	2
France	Franc	5.4277	5.6183	5.2571	5.6641	5.8422	4	-6	8	3
Germany	Mark	1.6111	1.6523	1.5513	1.6543	1.7204	3	-6	7	4
Italy	Lira	1195.03	1235.03	1220.85	1575.05	1689.22	3	-1	29	7
Norway	Krone	6.2383	6.4641	6.1652	7.0972	7.4249	4	-5	15	5
Spain	Peseta	101.7	103.48	101.5	127.1	139.8	2	-2	25	10
United Kingdom	Pound	0.5599	0.5658	0.5652	0.6665	0.6698	1	0	18	1
Japan	Yen	144.05	134.59	126.34	110.85	106.54	-7	-6	-12	-4
Hong Kong	Dollar	7.79	7.7712	7.7399	7.7351	7.7244	0	0	0	0
Singapore	Dollar	1.8129	1.7277	1.6284	1.6155	1.5851	-5	-6	-1	-2
Taiwan	Dollar	26.64	26.49	24.93	26.15	26.45	-1	-6	5	1
Korea	Won	242.7	730.67	782.41	799.42	808.34	201	7	2	1
China	Renminbi	4.7912	5.334	5.5076	5.758	8.5616	11	3	5	49

Source: Dataquest (April 1994)

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A new forecasting process for each application is being used to improve revenue and unit shipment control by region and by platform. This new process may cause some mismatch in market share tables and forecast tables. Please use the forecast tables to understand the year-to-year changes. Use the market share tables to compare company-to-company performance.

Forecast Methodology

Fundamental to the way Dataquest conducts its research is an underlying philosophy that says 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 forecasting techniques such as time series and technological modeling. Market estimates and forecasts are derived using the following research techniques:

- "Bottom-up" aggregation—This method involves adding all relevant vendor contributions to arrive at total market estimates for all historical data.
- Segment forecasting—For each application segment tracked by the CAD/CAM/CAE and GIS group, individual forecasts are derived following the basic information model defined previously. Specifically, each design phase covered within each application is segmented by product, region, and platform. 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. Installed base is also evaluated. Rates of product retirement are primarily based on input from end users in our ongoing survey programs. Dataquest analysts also factor in the acceptance or ability for users to consume new technology.

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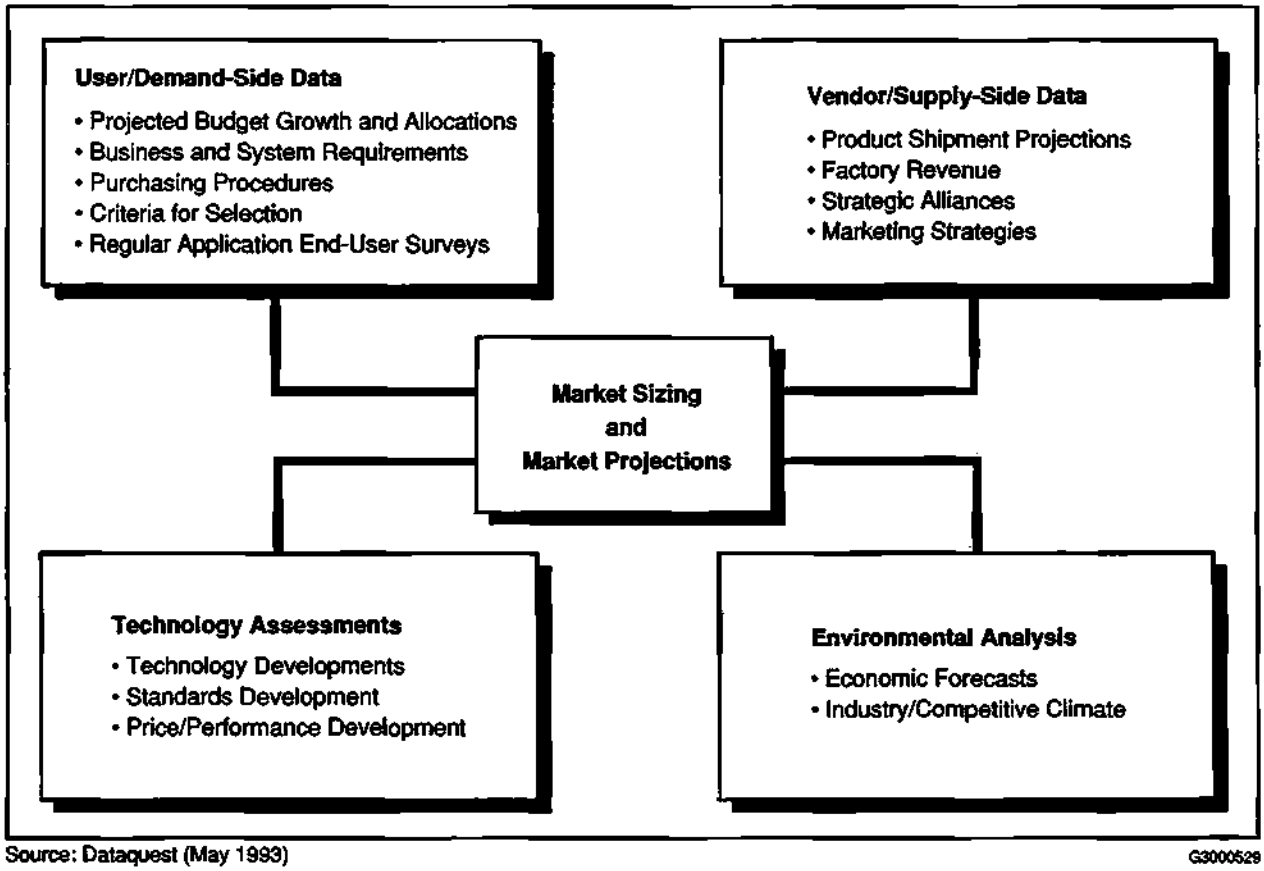
Figure 1
CAD/CAM/CAE and GIS Forecasting Model



Source: Dataquest (May 1993) G3000529

- 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

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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 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 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 (which includes Austria, Switzerland, and eastern Europe)

Asia

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

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Rest of World

Rest of World includes all other countries including Australia, New Zealand, Oceania, 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.

Server

A server is a computer that transparently provides its resources for use by other computer systems. It is a system on a network that provides specific functionality to other computer systems: the clients. Functions include file storage, database access, and compute capability. Dataquest tracks the following major categories of servers used for CAD/CAM/CAE and GIS applications:

- Compute Servers—These systems provide capabilities for solving numerical problems (for example, simulations, statistical calculations, and simultaneous partial differential equations). System features usually include high-speed computational capabilities (for example, vector and parallel processing) and large memories.
- Print Servers—These systems provide access to printers, specialized printing applications software, and print-spooling resources to a network.
- File Servers—These systems provide mass storage capability to clients on a network. Services can range from temporary storage of working files to long-term backup and archive systems.
- Database Servers—These systems manage databases as a shared resource to a network. These servers handle such functions as physical data storage, data security, and high-level queries and can access stored information at the record level.

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.

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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. (In the case of technical workstations and personal computers, CPU revenue contains the terminal revenue.)
- 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 of a 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-dependent platform, as terminal revenue is contained within CPU revenue for technical workstations and PCs.
- Software revenue is revenue derived from the sale of bundled (part of a turnkey system) and unbundled software.
- Service revenue is defined as revenue derived from the service and support of CAD/CAM/CAE or GIS systems. Service revenue can be calculated in the tables by subtracting hardware and software revenue from total revenue.
- Total factory revenue is defined as the amount of money received by a manufacturer for its goods measured in U.S. dollars and is the sum of hardware, software, and service revenue. Total factory revenue does not include revenue that a company may receive from products sold to another company for resale (OEM revenue).

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Table 3
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Worldwide
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	37,427	50,684	62,806	77,937	97,783	114,900	137,000	161,200	187,000	213,300	27	17
Unit Shipments or Seats	41,100	54,808	65,389	79,557	98,658	115,500	137,400	161,600	187,200	213,500	24	17
CPU Installed Base	83,384	128,797	181,110	239,029	299,931	360,700	431,100	512,700	602,200	694,500	38	18
Installed Seats	99,083	148,046	201,792	259,627	318,989	377,400	445,100	523,600	609,600	699,200	34	17
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	69.3	56.5	62.4	48.3	37.8	35.0	32.5	30.7	29.6	29.0	-14	-5
Hardware-Only ASP	12.9	10.9	9.6	10.5	8.1	7.4	7.0	6.7	6.4	6.2	-11	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	825	977	1,090	1,198	1,128	1,183	1,283	1,400	1,535	1,677	8	8
CPU Revenue	650	786	875	1,029	995	1,051	1,150	1,264	1,394	1,529	11	9
Terminal Revenue	68	56	39	44	14	10	8	6	4	3	-33	-25
Peripheral Revenue (Turnkey)	107	135	176	126	120	123	126	130	137	144	3	4
Software Revenue	352	465	522	588	657	737	838	947	1,065	1,186	17	13
Bundled	181	239	247	260	284	302	327	353	380	407	12	7
Unbundled	170	226	275	328	373	435	511	595	684	779	22	16
Service Revenue	228	295	324	374	418	458	509	573	635	707	16	11
Total Factory Revenue	1,405	1,737	1,936	2,160	2,203	2,378	2,630	2,920	3,235	3,570	12	10
Increase over Prior Year (%)	35	24	11	12	2	8	11	11	11	10		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 4
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Worldwide
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	10,800	15,473	15,300	20,344	23,540	26,100	29,200	32,400	35,800	39,400	22	11
Unit Shipments or Seats	10,800	15,473	15,300	20,344	23,540	26,100	29,200	32,400	35,800	39,400	22	11
CPU Installed Base	20,493	35,048	48,631	65,305	82,644	99,200	115,800	132,300	149,200	163,800	42	15
Installed Seats	20,345	35,048	48,631	65,305	82,644	99,200	115,800	132,300	149,200	163,800	42	15
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	58.8	52.5	64.0	51.1	43.2	40.8	38.5	36.7	35.6	34.7	-7	-4
Hardware-Only ASP	21.7	24.6	23.6	22.8	21.1	20.2	19.5	18.7	18.0	17.3	-1	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	395	536	590	619	598	618	641	668	705	744	11	4
CPU Revenue	320	435	448	519	501	520	542	567	600	635	12	5
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	75	101	142	101	96	98	99	101	105	109	6	3
Software Revenue	195	283	299	360	395	434	481	529	579	631	19	10
Bundled	132	182	183	210	224	239	259	279	300	318	14	7
Unbundled	63	101	116	150	171	195	221	250	280	313	28	13
Service Revenue	134	195	190	251	292	319	348	381	413	447	21	9
Total Factory Revenue	724	1,014	1,079	1,230	1,285	1,371	1,469	1,577	1,697	1,823	15	7
Increase over Prior Year (%)	46	40	6	14	4	7	7	7	8	7		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (April 1994)

CAEC-WW-MS-9402

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Table 5
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Worldwide
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,883	2,554	923	1,167	793	600	500	400	300	300	-19	-18
Unit Shipments or Seats	5,556	6,678	3,506	2,787	1,668	1,200	900	700	500	400	-26	-25
CPU Installed Base	4,554	6,880	7,457	8,104	8,212	8,000	7,300	6,400	5,700	5,000	16	-9
Installed Seats	20,422	26,128	28,139	28,702	27,270	24,700	21,300	17,300	13,200	9,600	7	-19
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	267.4	139.8	147.4	130.2	90.6	85.3	78.1	71.6	65.0	60.2	-24	-8
Hardware-Only ASP	129.9	115.1	296.3	156.8	136.1	126.2	121.0	116.3	111.4	107.0	1	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	283	275	142	156	70	52	39	30	22	17	-29	-25
CPU Revenue	188	196	90	107	52	38	29	22	16	12	-28	-25
Terminal Revenue	68	56	39	44	14	10	8	6	4	3	-33	-25
Peripheral Revenue (Turnkey)	27	23	13	6	5	4	3	2	2	1	-34	-25
Software Revenue	88	87	47	28	20	14	10	7	5	3	-31	-30
Bundled	43	48	27	16	15	10	7	5	3	2	-24	-31
Unbundled	45	39	20	13	5	4	3	2	1	1	-41	-30
Service Revenue	83	85	41	39	25	19	14	11	7	6	-26	-25
Total Factory Revenue	455	446	231	223	115	84	63	47	34	26	-29	-26
Increase over Prior Year (%)	22	-2	-48	-3	-49	-27	-25	-25	-29	-24		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 6
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Worldwide
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	3,711	5,258	5,664	6,100	7,200	8,500	9,900	11,400	NA	15
Unit Shipments or Seats	NA	NA	3,711	5,258	5,664	6,100	7,200	8,500	9,900	11,400	NA	15
CPU Installed Base	NA	NA	3,711	8,969	14,318	19,600	24,800	30,500	35,400	40,700	NA	23
Installed Seats	NA	NA	3,711	8,969	14,318	19,600	24,800	30,500	35,400	40,700	NA	23
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	78.1	67.2	67.1	62.9	59.5	57.0	55.4	54.4	NA	-4
Hardware-Only ASP	NA	NA	42.8	37.7	36.3	35.2	34.6	33.9	33.2	32.6	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	169	206	209	214	246	282	321	364	NA	12
CPU Revenue	NA	NA	156	195	197	202	232	267	304	344	NA	12
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	13	10	11	13	14	15	17	19	NA	11
Software Revenue	NA	NA	52	52	63	75	88	102	117	134	NA	16
Bundled	NA	NA	27	23	30	35	42	48	55	63	NA	16
Unbundled	NA	NA	25	29	34	39	46	54	62	71	NA	16
Service Revenue	NA	NA	82	71	85	95	112	133	154	178	NA	16
Total Factory Revenue	NA	NA	302	329	358	384	445	516	592	675	NA	14
Increase over Prior Year (%)	NA	NA	NA	9	9	8	16	16	15	14		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (April 1994)

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Table 7
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Worldwide
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	24,744	32,657	42,872	51,169	67,787	82,100	100,100	120,000	141,000	162,200	29	19
Unit Shipments or Seats	24,744	32,657	42,872	51,169	67,787	82,100	100,100	120,000	141,000	162,200	29	19
CPU Installed Base	58,338	86,869	121,311	156,650	194,757	233,900	283,200	343,500	411,800	485,100	35	20
Installed Seats	58,316	86,869	121,311	156,650	194,757	233,900	283,200	343,500	411,800	485,100	35	20
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	25.5	21.4	15.2	12.3	8.0	7.6	7.2	6.9	6.7	6.6	-25	-4
Hardware-Only ASP	5.6	4.7	4.1	4.0	3.6	3.6	3.5	3.5	3.4	3.4	-10	-1
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	147	167	189	217	252	299	357	421	487	552	14	17
CPU Revenue	142	156	182	208	244	290	347	409	474	538	15	17
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	5	11	8	9	7	9	10	11	13	14	10	14
Software Revenue	68	95	124	148	178	214	260	310	364	418	27	19
Bundled	7	9	9	11	15	17	19	21	23	23	23	9
Unbundled	62	86	114	137	163	197	241	289	341	395	27	19
Service Revenue	11	14	11	13	16	25	35	49	61	76	10	36
Total Factory Revenue	226	276	324	378	446	538	652	780	912	1,046	19	19
Increase over Prior Year (%)	30	22	17	17	18	21	21	20	17	15		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 8
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: North America
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	22,983	29,245	38,714	44,400	56,540	67,900	81,800	96,700	112,000	127,800	25	18
Unit Shipments or Seats	24,900	31,207	39,936	44,817	56,655	68,000	81,800	96,700	112,000	127,800	23	18
CPU Installed Base	52,877	78,651	110,462	141,836	174,681	208,100	248,900	297,800	350,900	406,000	35	18
Installed Seats	63,148	90,233	122,317	152,857	184,133	215,700	254,700	301,700	353,000	406,800	31	17
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	59.8	53.2	62.6	43.9	32.8	30.5	28.3	26.6	25.4	24.8	-14	-5
Hardware-Only ASP	12.2	9.9	8.9	10.0	7.4	6.9	6.5	6.2	6.0	5.8	-12	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	390	426	498	546	501	549	606	672	740	813	7	10
CPU Revenue	313	343	407	487	457	505	562	628	695	766	10	11
Terminal Revenue	39	32	19	21	5	4	3	2	1	1	-41	-27
Peripheral Revenue (Turnkey)	38	50	72	38	39	40	41	42	44	47	1	3
Software Revenue	152	193	231	242	272	310	355	404	455	507	16	13
Bundled	52	66	66	64	71	75	80	85	90	95	8	6
Unbundled	100	127	164	177	201	235	275	319	364	412	19	15
Service Revenue	114	134	149	154	173	191	212	239	264	294	11	11
Total Factory Revenue	656	753	878	942	946	1,050	1,173	1,315	1,459	1,615	10	11
Increase over Prior Year (%)	29	15	17	7	1	11	12	12	11	11		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 9
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: North America
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	4,635	5,959	5,959	7,469	7,993	8,700	9,400	10,300	11,200	12,100	15	9
Unit Shipments or Seats	4,635	5,959	5,959	7,469	7,993	8,700	9,400	10,300	11,200	12,100	15	9
CPU Installed Base	9,658	15,181	20,299	25,998	31,306	35,900	40,400	44,600	48,900	52,300	34	11
Installed Seats	9,658	15,181	20,299	25,998	31,306	35,900	40,400	44,600	48,900	52,300	34	11
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	48.6	48.4	62.1	46.4	39.7	37.5	35.2	33.5	32.3	31.3	-5	-5
Hardware-Only ASP	20.6	23.2	22.8	21.6	20.0	19.2	18.5	17.7	17.0	16.3	-1	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	144	190	211	203	183	186	189	193	200	208	6	3
CPU Revenue	117	153	153	175	155	158	161	166	173	180	7	3
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	27	37	57	29	28	28	28	27	28	28	1	-0
Software Revenue	69	101	107	119	124	133	143	153	165	176	16	7
Bundled	40	53	49	52	51	53	55	58	59	60	6	3
Unbundled	29	48	58	67	73	80	88	96	105	116	26	10
Service Revenue	62	84	75	88	103	110	116	125	132	141	14	6
Total Factory Revenue	275	375	393	410	411	429	448	471	497	525	11	5
Increase over Prior Year (%)	31	36	5	4	0	5	4	5	6	6		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 10
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: North America
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,110	1,190	263	616	266	200	200	100	100	100	-30	-18
Unit Shipments or Seats	3,027	3,151	1,484	1,033	382	300	200	200	100	100	-40	-23
CPU Installed Base	2,647	3,667	3,717	4,005	3,912	3,700	3,200	2,700	2,400	2,000	10	-13
Installed Seats	12,918	15,250	15,572	15,026	13,364	11,300	9,000	6,700	4,500	2,800	1	-27
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	272.5	158.5	157.4	140.3	111.7	101.7	93.3	85.6	78.3	72.1	-20	-8
Hardware-Only ASP	123.0	111.2	283.3	139.9	112.3	106.7	101.3	96.3	91.5	86.9	-2	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	150	134	54	85	28	21	16	11	8	6	-34	-27
CPU Revenue	101	93	30	63	22	17	12	9	6	5	-32	-27
Terminal Revenue	39	32	19	21	5	4	3	2	1	1	-41	-27
Peripheral Revenue (Turnkey)	9	9	4	0	1	1	1	0	0	0	-42	-34
Software Revenue	41	36	15	8	4	3	2	1	1	1	-44	-33
Bundled	11	11	4	1	2	1	1	1	0	0	-36	-39
Unbundled	30	25	11	6	2	1	1	1	0	0	-49	-30
Service Revenue	45	42	17	18	11	8	6	5	3	2	-29	-29
Total Factory Revenue	235	212	85	110	43	32	23	17	11	8	-35	-28
Increase over Prior Year (%)	25	-10	-60	30	-61	-26	-26	-26	-36	-25		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 11
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: North America
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	2,597	3,540	3,744	4,400	5,100	6,000	6,900	7,900	NA	16
Unit Shipments or Seats	NA	NA	2,597	3,540	3,744	4,400	5,100	6,000	6,900	7,900	NA	16
CPU Installed Base	NA	NA	2,597	6,137	9,668	13,500	17,300	21,500	24,900	28,600	NA	24
Installed Seats	NA	NA	2,597	6,137	9,668	13,500	17,300	21,500	24,900	28,600	NA	24
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	71.8	58.8	64.3	60.4	57.1	54.6	52.9	51.9	NA	-4
Hardware-Only ASP	NA	NA	42.0	36.0	35.6	34.9	34.2	33.6	32.9	32.2	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	112	129	133	152	173	197	222	248	NA	13
CPU Revenue	NA	NA	104	124	127	145	165	189	213	238	NA	13
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	8	5	6	7	7	8	9	10	NA	11
Software Revenue	NA	NA	31	29	36	42	48	56	63	72	NA	15
Bundled	NA	NA	12	9	13	15	18	20	23	27	NA	16
Unbundled	NA	NA	19	20	23	27	31	35	40	45	NA	14
Service Revenue	NA	NA	51	42	50	59	69	82	94	107	NA	16
Total Factory Revenue	NA	NA	194	200	219	253	291	334	379	427	NA	14
Increase over Prior Year (%)	NA	NA	NA	3	9	16	15	15	13	13		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 12
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: North America
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	17,238	22,096	29,896	32,776	44,537	54,600	67,000	80,300	93,800	107,700	27	19
Unit Shipments or Seats	17,238	22,096	29,896	32,776	44,537	54,600	67,000	80,300	93,800	107,700	27	19
CPU Installed Base	40,572	59,803	83,849	105,696	129,794	155,000	188,000	228,900	274,700	323,100	34	20
Installed Seats	40,572	59,803	83,849	105,696	129,794	155,000	188,000	228,900	274,700	323,100	34	20
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	69.8	15.5	14.6	8.4	6.5	6.3	5.9	5.8	5.7	5.6	-45	-3
Hardware-Only ASP	5.4	4.5	4.0	3.9	3.5	3.5	3.4	3.4	3.3	3.3	-10	-1
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	96	102	122	129	157	189	229	270	311	352	13	18
CPU Revenue	95	97	119	125	153	185	223	263	303	343	13	18
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	2	5	3	4	4	5	5	6	7	8	23	17
Software Revenue	42	56	78	86	108	132	162	193	226	259	26	19
Bundled	1	1	2	2	5	6	6	7	7	8	44	8
Unbundled	41	55	77	84	103	126	156	187	218	251	26	20
Service Revenue	7	8	6	6	8	13	20	28	36	44	6	39
Total Factory Revenue	146	166	206	221	273	335	410	492	572	655	17	19
Increase over Prior Year (%)	34	14	24	7	24	23	22	20	16	14		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 13
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Europe
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	9,414	13,457	13,860	19,972	25,521	28,800	33,400	38,800	45,100	51,400	28	15
Unit Shipments or Seats	10,524	14,956	14,675	20,382	25,760	28,900	33,600	38,900	45,100	51,500	25	15
CPU Installed Base	22,023	34,019	45,131	60,080	76,956	93,400	111,400	130,800	152,200	174,000	37	18
Installed Seats	25,597	39,165	50,964	66,021	82,654	98,600	115,800	134,300	154,600	175,600	34	16
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	80.0	62.4	70.3	52.0	37.1	33.8	31.1	29.0	27.8	26.9	-17	-6
Hardware-Only ASP	14.5	12.5	11.7	11.6	9.7	8.4	8.0	7.7	7.4	7.1	-10	-6
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	278	336	352	374	362	354	373	396	427	461	7	5
CPU Revenue	223	281	287	326	327	320	340	364	395	429	10	6
Terminal Revenue	17	14	10	10	3	2	2	1	1	1	-32	-26
Peripheral Revenue (Turnkey)	39	41	54	38	32	32	31	30	31	31	-5	-1
Software Revenue	137	181	187	213	236	261	291	323	357	394	15	11
Bundled	90	116	119	112	120	125	133	139	145	150	7	5
Unbundled	47	64	68	102	117	136	158	184	212	243	25	16
Service Revenue	81	112	117	149	167	177	193	212	231	252	20	9
Total Factory Revenue	496	628	656	736	765	791	856	930	1,015	1,107	11	8
Increase over Prior Year (%)	33	27	4	12	4	3	8	9	9	9		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 14
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Europe
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	4,140	6,351	5,941	7,997	10,053	11,000	12,100	13,200	14,400	15,600	25	9
Unit Shipments or Seats	4,140	6,351	5,941	7,997	10,053	11,000	12,100	13,200	14,400	15,600	25	9
CPU Installed Base	7,873	13,841	19,139	25,734	33,372	40,600	47,800	54,600	61,300	66,800	43	15
Installed Seats	7,759	13,841	19,139	25,734	33,372	40,600	47,800	54,600	61,300	66,800	44	15
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	66.3	53.9	66.9	51.4	39.7	37.3	35.0	33.2	32.0	31.0	-12	-5
Hardware-Only ASP	22.9	26.2	24.4	23.2	21.8	20.9	20.1	19.3	18.5	17.8	-1	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	164	219	237	240	239	243	247	252	260	270	10	3
CPU Revenue	137	188	191	209	212	217	222	228	237	247	12	3
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	27	31	46	31	26	26	25	24	24	24	-1	-2
Software Revenue	90	128	132	153	170	185	201	217	234	252	17	8
Bundled	66	92	94	92	100	104	110	114	119	122	11	4
Unbundled	24	37	39	60	70	80	91	103	116	129	31	13
Service Revenue	53	83	82	114	131	142	152	163	175	186	25	7
Total Factory Revenue	307	430	451	506	539	569	600	632	669	708	15	6
Increase over Prior Year (%)	48	40	5	12	7	6	5	5	6	6		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 15
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Europe
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	596	723	235	130	78	100	0	0	0	0	-40	-100
Unit Shipments or Seats	1,706	2,222	1,050	540	317	200	200	100	100	100	-34	-21
CPU Installed Base	1,440	2,122	2,259	2,246	2,082	1,900	1,600	1,300	1,100	800	10	-17
Installed Seats	5,145	7,268	8,092	8,187	7,779	7,000	6,000	4,700	3,400	2,400	11	-21
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	197.3	163.3	250.0	348.5	266.9	240.3	220.8	202.3	186.2	171.3	8	-8
Hardware-Only ASP	144.6	118.6	283.4	283.3	237.9	227.8	216.7	206.9	195.0	186.2	13	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	84	82	46	33	16	11	9	7	5	4	-34	-24
CPU Revenue	58	60	32	21	12	9	7	5	4	3	-32	-24
Terminal Revenue	17	14	10	10	3	2	2	1	1	1	-32	-26
Peripheral Revenue (Turnkey)	9	8	4	2	1	1	0	0	0	0	-48	-24
Software Revenue	31	30	18	10	4	3	2	2	1	1	-38	-29
Bundled	21	23	14	8	4	3	2	1	1	1	-35	-30
Unbundled	10	8	4	2	1	1	0	0	0	0	-47	-27
Service Revenue	25	26	13	12	6	4	3	3	2	2	-30	-24
Total Factory Revenue	139	138	77	56	27	19	14	11	8	6	-34	-25
Increase over Prior Year (%)	15	-1	-44	-27	-52	-30	-24	-24	-25	-21		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 16
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Europe
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	721	1,237	1,393	1,000	1,300	1,500	1,800	2,100	NA	9
Unit Shipments or Seats	NA	NA	721	1,237	1,393	1,000	1,300	1,500	1,800	2,100	NA	9
CPU Installed Base	NA	NA	721	1,958	3,276	4,100	4,900	5,900	6,600	7,500	NA	18
Installed Seats	NA	NA	721	1,958	3,276	4,100	4,900	5,900	6,600	7,500	NA	18
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	88.4	71.8	65.8	61.3	58.0	55.3	53.5	52.3	NA	-4
Hardware-Only ASP	NA	NA	46.1	42.5	38.5	37.7	37.0	36.2	35.5	34.8	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	37	55	54	37	44	50	58	67	NA	5
CPU Revenue	NA	NA	33	52	50	34	40	46	54	63	NA	5
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	4	3	3	4	4	4	5	5	NA	7
Software Revenue	NA	NA	14	15	19	23	28	32	37	42	NA	17
Bundled	NA	NA	9	8	11	13	15	17	19	20	NA	13
Unbundled	NA	NA	5	7	8	10	13	15	18	21	NA	21
Service Revenue	NA	NA	20	20	25	23	28	32	37	43	NA	12
Total Factory Revenue	NA	NA	71	90	98	84	99	115	132	153	NA	9
Increase over Prior Year (%)	NA	NA	NA	27	9	-14	19	16	15	15		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (April 1994)

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Table 17
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Europe
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	4,677	6,383	6,962	10,609	13,998	16,600	20,000	24,000	28,800	33,700	32	19
Unit Shipments or Seats	4,677	6,383	6,962	10,609	13,998	16,600	20,000	24,000	28,800	33,700	32	19
CPU Installed Base	12,709	18,057	23,012	30,142	38,227	46,800	57,000	69,100	83,200	99,000	32	21
Installed Seats	12,693	18,057	23,012	30,142	38,227	46,800	57,000	69,100	83,200	99,000	32	21
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	99.1	79.8	11.8	9.8	6.9	6.6	6.3	6.1	6.0	5.9	-49	-3
Hardware-Only ASP	6.0	5.0	4.4	4.2	3.8	3.8	3.7	3.7	3.6	3.5	-11	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	30	35	32	46	53	62	74	87	103	119	15	17
CPU Revenue	28	33	31	44	52	61	72	85	101	117	16	17
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	2	2	1	1	1	1	2	2	2	2	-11	14
Software Revenue	16	22	23	35	42	50	60	71	85	100	27	19
Bundled	2	2	2	3	4	5	6	7	7	7	17	10
Unbundled	14	20	21	32	38	45	54	65	78	93	28	20
Service Revenue	3	3	2	3	5	7	10	14	17	21	19	32
Total Factory Revenue	49	60	57	84	101	120	143	172	205	240	20	19
Increase over Prior Year (%)	16	22	-5	48	20	19	20	20	19	17		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 18
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Asia
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	3,139	5,938	6,574	8,346	9,681	10,800	12,400	14,100	16,100	18,100	33	13
Unit Shipments or Seats	3,631	6,416	6,957	9,027	10,178	11,200	12,600	14,300	16,200	18,200	29	12
CPU Installed Base	5,143	10,896	17,003	24,107	30,873	37,000	43,200	49,700	56,800	64,100	57	16
Installed Seats	6,341	12,597	19,055	26,756	33,874	40,200	46,300	52,600	59,400	66,200	52	14
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	65.0	51.0	50.8	48.7	46.0	43.2	40.8	39.0	38.0	37.3	-8	-4
Hardware-Only ASP	17.1	14.2	11.5	11.8	8.3	7.8	7.5	7.2	7.0	6.8	-17	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	118	174	180	205	195	202	213	227	247	267	13	6
CPU Revenue	81	128	131	151	147	154	164	175	192	209	16	7
Terminal Revenue	10	6	6	10	5	4	3	2	2	1	-17	-21
Peripheral Revenue (Turnkey)	27	40	43	44	43	44	47	49	53	57	12	6
Software Revenue	43	69	75	98	110	119	134	151	170	191	26	12
Bundled	33	51	54	71	79	85	94	105	117	130	25	10
Unbundled	11	18	22	27	31	34	39	46	53	61	31	15
Service Revenue	21	36	40	47	51	58	65	75	85	96	24	13
Total Factory Revenue	183	279	295	349	356	378	412	452	502	555	18	9
Increase over Prior Year (%)	39	52	6	18	2	6	9	10	11	10		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (April 1994)

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Table 19
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Asia
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,421	2,525	2,623	3,639	4,043	4,600	5,400	6,200	7,200	8,200	30	15
Unit Shipments or Seats	1,421	2,525	2,623	3,639	4,043	4,600	5,400	6,200	7,200	8,200	30	15
CPU Installed Base	1,901	4,363	6,859	10,157	13,449	16,800	20,300	23,900	27,900	31,600	63	19
Installed Seats	1,868	4,363	6,859	10,157	13,449	16,800	20,300	23,900	27,900	31,600	64	19
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	62.7	55.1	59.9	57.9	55.1	51.9	48.8	46.3	44.7	43.4	-3	-5
Hardware-Only ASP	25.7	32.2	28.5	31.3	25.4	24.3	23.4	22.4	21.5	20.7	-0	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	65	104	114	143	143	151	162	174	190	206	22	8
CPU Revenue	47	74	81	106	106	113	122	131	143	156	22	8
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	18	31	33	36	37	38	41	43	47	50	19	6
Software Revenue	23	38	44	69	78	88	102	117	133	150	36	14
Bundled	20	32	35	57	63	70	81	91	103	115	33	13
Unbundled	3	6	8	12	15	18	21	25	30	35	51	18
Service Revenue	10	21	24	33	39	46	53	61	69	78	40	15
Total Factory Revenue	99	162	181	245	260	285	317	352	393	434	27	11
Increase over Prior Year (%)	59	65	11	35	6	10	11	11	12	11		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 20
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Asia
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	121	537	403	359	402	300	300	200	200	100	35	-24
Unit Shipments or Seats	613	1,016	786	1,040	898	700	500	400	300	200	10	-26
CPU Installed Base	322	850	1,229	1,557	1,897	2,100	2,200	2,100	2,000	1,900	56	0
Installed Seats	1,559	2,551	3,281	4,206	4,898	5,300	5,300	5,100	4,600	4,000	33	-4
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	647.1	104.2	91.9	73.3	61.9	58.7	53.8	49.5	45.3	41.8	-44	-8
Hardware-Only ASP	170.7	132.4	339.9	202.1	237.5	225.7	214.5	203.8	193.2	184.0	9	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	41	46	36	29	20	16	12	10	7	6	-16	-22
CPU Revenue	23	34	25	17	13	10	8	6	5	4	-14	-23
Terminal Revenue	10	6	6	10	5	4	3	2	2	1	-17	-21
Peripheral Revenue (Turnkey)	8	6	5	3	3	2	2	1	1	1	-20	-24
Software Revenue	14	17	13	9	11	8	5	4	3	2	-5	-30
Bundled	10	13	9	6	9	6	4	3	2	1	-3	-30
Unbundled	4	4	4	3	2	2	1	1	1	0	-13	-30
Service Revenue	10	13	10	8	7	5	4	3	2	2	-11	-22
Total Factory Revenue	65	76	58	46	38	29	22	17	12	9	-12	-24
Increase over Prior Year (%)	27	18	-23	-22	-17	-24	-25	-24	-25	-24		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (April 1994)

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Table 21
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Asia
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	115	91	96	100	100	200	200	300	NA	26
Unit Shipments or Seats	NA	NA	115	91	96	100	100	200	200	300	NA	26
CPU Installed Base	NA	NA	115	206	296	400	500	600	800	900	NA	25
Installed Seats	NA	NA	115	206	296	400	500	600	800	900	NA	25
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	80.9	85.3	83.8	79.0	74.6	71.3	69.2	67.8	NA	-4
Hardware-Only ASP	NA	NA	NA	NA	.0	.0	.0	.0	.0	.0	NA	NA
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	6	5	5	6	7	8	10	12	NA	17
CPU Revenue	NA	NA	4	4	4	5	5	6	8	9	NA	17
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	1	1	1	1	1	2	2	3	NA	18
Software Revenue	NA	NA	4	3	3	3	4	5	6	7	NA	22
Bundled	NA	NA	4	3	3	3	4	5	6	7	NA	22
Unbundled	NA	NA	NA	NA	0	0	0	0	0	0	NA	NA
Service Revenue	NA	NA	5	4	4	5	6	7	9	11	NA	21
Total Factory Revenue	NA	NA	14	11	12	14	16	20	25	30	NA	20
Increase over Prior Year (%)	NA	NA	NA	-18	9	12	16	23	25	23		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 22
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Asia
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,598	2,875	3,433	4,257	5,141	5,800	6,600	7,400	8,500	9,500	34	13
Unit Shipments or Seats	1,598	2,875	3,433	4,257	5,141	5,800	6,600	7,400	8,500	9,500	34	13
CPU Installed Base	2,921	5,683	8,801	12,188	15,231	17,700	20,200	23,000	26,200	29,600	51	14
Installed Seats	2,914	5,683	8,801	12,188	15,231	17,700	20,200	23,000	26,200	29,600	51	14
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	13.5	19.0	16.4	15.7	11.7	11.3	10.7	10.4	10.2	10.1	-4	-3
Hardware-Only ASP	6.8	5.7	5.0	4.8	4.4	4.3	4.2	4.2	4.1	4.0	-10	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	12	24	24	28	26	29	32	35	39	44	21	11
CPU Revenue	11	20	21	25	24	26	29	33	36	40	22	11
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	1	4	3	3	2	3	3	3	3	3	15	6
Software Revenue	7	14	15	18	18	20	23	25	29	32	28	12
Bundled	3	6	6	6	5	5	5	6	6	6	13	5
Unbundled	4	8	9	12	13	15	17	20	23	26	36	14
Service Revenue	1	2	2	2	1	2	2	3	4	5	12	33
Total Factory Revenue	20	40	42	47	46	51	57	64	72	81	23	12
Increase over Prior Year (%)	7	102	4	13	-4	11	12	13	13	12		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 23
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Rest of World
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,892	2,044	3,658	5,219	6,040	7,400	9,400	11,600	13,900	16,000	34	22
Unit Shipments or Seats	2,045	2,229	3,821	5,331	6,065	7,400	9,400	11,600	13,900	16,000	31	21
CPU Installed Base	3,342	5,231	8,513	13,005	17,421	22,100	27,700	34,400	42,300	50,400	51	24
Installed Seats	3,997	6,050	9,456	13,992	18,329	22,900	28,300	35,000	42,600	50,600	46	23
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	80.2	63.9	71.2	44.5	33.3	30.3	28.0	26.3	25.7	25.4	-20	-5
Hardware-Only ASP	12.6	14.0	10.2	10.2	8.8	8.2	7.7	7.3	7.1	6.9	-9	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	39	41	60	73	70	79	91	106	121	136	16	14
CPU Revenue	33	34	50	65	63	72	84	97	112	126	18	15
Terminal Revenue	3	4	3	3	1	1	0	0	0	0	-26	-28
Peripheral Revenue (Turnkey)	4	3	7	6	6	7	7	8	9	10	11	11
Software Revenue	19	23	29	36	39	47	58	70	82	94	20	19
Bundled	7	6	8	13	14	17	20	24	28	32	22	17
Unbundled	12	16	21	23	25	30	38	46	55	62	19	20
Service Revenue	13	13	18	24	27	32	39	47	55	64	21	19
Total Factory Revenue	71	77	107	133	136	158	189	223	259	294	18	17
Increase over Prior Year (%)	123	9	39	25	2	16	19	18	16	14		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 24
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Rest of World
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	604	637	777	1,239	1,451	1,800	2,200	2,600	3,100	3,600	25	20
Unit Shipments or Seats	604	637	777	1,239	1,451	1,800	2,200	2,600	3,100	3,600	25	20
CPU Installed Base	1,061	1,664	2,334	3,416	4,517	5,900	7,400	9,200	11,100	13,100	44	24
Installed Seats	1,061	1,664	2,334	3,416	4,517	5,900	7,400	9,200	11,100	13,100	44	24
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	70.8	62.1	71.4	43.6	36.6	34.6	32.5	30.9	29.8	28.9	-15	-5
Hardware-Only ASP	21.3	23.3	22.6	21.6	20.2	19.4	18.6	17.9	17.2	16.5	-1	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	22	22	29	34	33	37	43	49	54	60	10	13
CPU Revenue	19	20	22	29	28	32	37	42	47	52	10	13
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	3	2	6	5	5	5	6	6	7	8	13	10
Software Revenue	13	15	16	20	23	28	34	41	47	54	16	18
Bundled	5	5	6	9	10	11	13	16	18	21	16	16
Unbundled	7	10	11	11	13	17	21	25	29	33	16	20
Service Revenue	8	9	9	16	18	22	27	32	36	42	22	18
Total Factory Revenue	43	46	54	69	74	88	104	121	138	155	15	16
Increase over Prior Year (%)	172	7	18	28	7	18	19	17	13	13		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (April 1994)

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Table 25
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Rest of World
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	57	104	22	62	47	0	0	0	0	0	-4	-100
Unit Shipments or Seats	210	289	186	175	71	100	0	0	0	0	-24	-100
CPU Installed Base	144	241	252	296	321	300	300	300	300	200	22	-9
Installed Seats	800	1,060	1,194	1,283	1,229	1,100	1,000	800	600	500	11	-16
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	303.8	136.6	154.0	97.0	80.0	72.8	66.9	61.3	56.1	51.6	-28	-8
Hardware-Only ASP	147.3	122.8	366.9	150.2	136.4	129.6	123.1	116.9	111.1	105.5	-2	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	9	12	6	8	5	4	3	2	2	1	-13	-28
CPU Revenue	6	8	3	5	5	3	2	2	1	1	-7	-28
Terminal Revenue	3	4	3	3	1	1	0	0	0	0	-26	-28
Peripheral Revenue (Turnkey)	1	0	0	0	0	0	0	0	0	0	-39	-28
Software Revenue	3	4	2	1	1	0	0	0	0	0	-38	-31
Bundled	1	1	0	0	0	0	0	0	0	0	-35	-30
Unbundled	2	3	2	1	0	0	0	0	0	0	-39	-31
Service Revenue	3	4	2	2	1	1	1	1	0	0	-24	-25
Total Factory Revenue	16	20	10	11	7	5	4	3	2	1	-19	-28
Increase over Prior Year (%)	41	24	-50	13	-38	-32	-25	-26	-25	-31		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 26
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Rest of World
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	277	391	432	500	600	800	900	1,100	NA	21
Unit Shipments or Seats	NA	NA	277	391	432	500	600	800	900	1,100	NA	21
CPU Installed Base	NA	NA	277	668	1,077	1,500	2,000	2,600	3,100	3,700	NA	28
Installed Seats	NA	NA	277	668	1,077	1,500	2,000	2,600	3,100	3,700	NA	28
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	76.7	71.7	68.5	64.4	60.8	58.1	56.4	55.2	NA	-4
Hardware-Only ASP	NA	NA	43.9	40.9	35.5	34.8	34.1	33.4	32.8	32.1	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	14	17	17	20	23	26	32	37	NA	17
CPU Revenue	NA	NA	14	16	16	19	22	25	30	35	NA	17
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	0	1	1	1	1	1	1	2	NA	16
Software Revenue	NA	NA	4	5	5	6	8	9	11	13	NA	20
Bundled	NA	NA	2	3	3	4	5	6	7	8	NA	20
Unbundled	NA	NA	2	2	2	2	3	3	4	5	NA	18
Service Revenue	NA	NA	6	6	6	8	9	11	14	16	NA	21
Total Factory Revenue	NA	NA	24	28	28	33	39	47	56	65	NA	18
Increase over Prior Year (%)	NA	NA	NA	17	3	18	18	19	20	16		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 27
CAD/CAM/CAE/GIS History and Forecast

Application: GIS/Mapping
Region: Rest of World
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,231	1,302	2,581	3,527	4,110	5,100	6,600	8,200	9,900	11,300	35	22
Unit Shipments or Seats	1,231	1,302	2,581	3,527	4,110	5,100	6,600	8,200	9,900	11,300	35	22
CPU Installed Base	2,137	3,326	5,650	8,625	11,505	14,400	18,000	22,400	27,700	33,300	52	24
Installed Seats	2,137	3,326	5,650	8,625	11,505	14,400	18,000	22,400	27,700	33,300	52	24
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	64.1	24.1	22.8	9.2	6.4	6.2	5.9	5.7	5.6	5.6	-44	-3
Hardware-Only ASP	5.6	4.6	4.2	4.1	3.7	3.6	3.6	3.5	3.5	3.4	-10	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	8	6	11	14	15	18	23	28	34	38	18	21
CPU Revenue	7	6	11	14	15	18	23	28	33	38	19	21
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	0	0	0	0	0	0	0	0	1	1	0	21
Software Revenue	3	3	7	9	10	12	16	20	24	27	34	22
Bundled	0	0	0	0	1	1	2	2	2	2	51	20
Unbundled	3	3	7	9	9	11	14	18	22	25	33	22
Service Revenue	1	1	1	1	1	2	3	4	5	6	14	37
Total Factory Revenue	11	10	19	25	26	32	42	52	62	71	23	22
Increase over Prior Year (%)	155	-9	78	33	6	23	29	24	20	14		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 28
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Worldwide
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	104,226	130,881	147,163	158,846	182,698	207,100	231,000	255,300	277,900	296,500	15	10
Unit Shipments or Seats	107,906	134,908	150,808	161,671	185,624	209,500	233,100	257,200	279,600	298,000	15	10
CPU Installed Base	286,141	389,267	490,586	577,169	642,612	697,400	766,200	852,700	943,200	1,025,500	22	10
Installed Seats	305,891	411,944	514,982	601,755	666,899	720,400	787,600	872,200	960,200	1,040,100	22	9
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	47.9	42.0	36.2	33.9	26.0	24.0	22.3	21.2	20.4	20.0	-14	-5
Hardware-Only ASP	5.2	4.3	4.5	4.4	4.3	4.1	3.9	3.8	3.7	3.7	-5	-3
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	1,045	1,115	1,202	1,229	1,167	1,221	1,287	1,371	1,475	1,570	3	6
CPU Revenue	846	906	999	1,034	992	1,050	1,113	1,191	1,284	1,368	4	7
Terminal Revenue	57	49	59	52	46	38	35	32	30	28	-5	-9
Peripheral Revenue (Turnkey)	142	160	144	143	128	133	139	148	161	174	-3	6
Software Revenue	460	571	673	755	830	899	979	1,067	1,157	1,235	16	8
Bundled	229	261	285	326	319	328	349	374	404	430	9	6
Unbundled	232	310	388	429	511	571	630	693	753	805	22	10
Service Revenue	248	299	316	360	391	407	434	469	518	565	12	8
Total Factory Revenue	1,753	1,985	2,191	2,344	2,388	2,528	2,700	2,907	3,150	3,370	8	7
Increase over Prior Year (%)	17	13	10	7	2	6	7	8	8	7		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 29
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Worldwide
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	12,582	16,580	20,939	23,849	25,739	27,800	30,700	34,600	39,300	44,200	20	11
Unit Shipments or Seats	12,582	16,580	20,939	23,849	25,739	27,800	30,700	34,600	39,300	44,200	20	11
CPU Installed Base	29,383	44,006	61,652	80,227	97,574	113,700	129,100	145,300	162,100	178,400	35	13
Installed Seats	29,217	44,006	61,652	80,227	97,574	113,700	129,100	145,300	162,100	178,400	35	13
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	52.1	42.2	43.8	43.6	40.5	38.7	36.5	34.8	33.7	32.8	-6	-4
Hardware-Only ASP	17.6	20.2	16.8	16.9	16.8	16.1	15.5	14.8	14.3	13.7	-1	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	393	458	526	580	543	558	582	622	683	744	8	7
CPU Revenue	303	354	444	494	460	473	494	528	580	633	11	7
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	90	104	81	86	83	85	88	93	102	111	-2	6
Software Revenue	193	231	303	340	362	377	403	437	479	520	17	7
Bundled	148	176	205	233	214	218	231	247	265	282	10	6
Unbundled	45	56	98	107	149	160	173	190	214	238	35	10
Service Revenue	145	191	206	251	284	294	310	335	369	405	18	7
Total Factory Revenue	731	881	1,035	1,170	1,189	1,229	1,295	1,393	1,531	1,668	13	7
Increase over Prior Year (%)	29	20	17	13	2	3	5	8	10	9		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 30
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Worldwide
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,099	2,133	1,446	1,222	1,349	1,400	1,500	1,500	1,700	1,900	5	7
Unit Shipments or Seats	4,780	6,161	5,092	4,046	4,275	3,800	3,600	3,400	3,400	3,400	-3	-4
CPU Installed Base	4,820	6,535	7,433	8,022	8,644	9,200	9,700	10,000	10,500	11,100	16	5
Installed Seats	24,766	29,212	31,829	32,608	32,931	32,300	31,000	29,400	27,400	25,700	7	-5
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	398.2	137.8	143.8	137.5	101.3	87.2	77.2	69.1	61.8	56.1	-29	-11
Hardware-Only ASP	118.0	117.0	286.7	225.9	188.3	171.1	165.5	160.1	157.8	156.3	12	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	223	225	208	165	145	129	123	119	115	115	-10	-4
CPU Revenue	139	151	132	104	91	82	79	77	76	76	-10	-3
Terminal Revenue	57	49	59	52	46	38	35	32	30	28	-5	-9
Peripheral Revenue (Turnkey)	27	25	17	9	8	8	9	9	10	11	-26	6
Software Revenue	70	75	56	45	43	36	30	26	23	20	-11	-14
Bundled	54	57	37	29	29	25	21	19	17	16	-14	-12
Unbundled	16	18	19	16	14	11	9	7	6	4	-3	-20
Service Revenue	71	71	57	48	45	40	39	37	37	37	-11	-4
Total Factory Revenue	364	371	321	259	233	205	192	182	174	172	-11	-6
Increase over Prior Year (%)	-17	2	-13	-19	-10	-12	-6	-6	-4	-1		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 31
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Worldwide
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	831	1,112	928	1,100	1,300	1,500	1,800	2,100	NA	18
Unit Shipments or Seats	NA	NA	831	1,112	928	1,100	1,300	1,500	1,800	2,100	NA	18
CPU Installed Base	NA	NA	831	1,942	2,804	3,700	4,600	5,700	6,500	7,500	NA	22
Installed Seats	NA	NA	831	1,942	2,804	3,700	4,600	5,700	6,500	7,500	NA	22
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	65.7	56.9	51.1	47.7	44.7	42.5	41.1	40.3	NA	-5
Hardware-Only ASP	NA	NA	NA	37.3	32.3	31.6	30.9	30.2	29.6	29.0	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	38	43	26	27	30	33	37	41	NA	10
CPU Revenue	NA	NA	32	37	21	22	24	27	30	34	NA	10
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	6	7	5	5	5	6	7	8	NA	10
Software Revenue	NA	NA	17	19	21	24	28	33	38	43	NA	16
Bundled	NA	NA	17	18	20	23	27	31	36	41	NA	15
Unbundled	NA	NA	NA	1	1	1	1	1	2	2	NA	32
Service Revenue	NA	NA	28	22	20	22	24	28	32	36	NA	13
Total Factory Revenue	NA	NA	83	84	66	73	82	93	106	120	NA	13
Increase over Prior Year (%)	NA	NA	NA	1	-21	10	13	14	14	13		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 32
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Worldwide
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	90,544	112,167	123,947	132,664	154,683	176,800	197,500	217,600	235,200	248,300	14	10
Unit Shipments or Seats	90,544	112,167	123,947	132,664	154,683	176,800	197,500	217,600	235,200	248,300	14	10
CPU Installed Base	251,939	338,726	420,670	486,978	533,590	570,700	622,900	691,700	764,000	828,400	21	9
Installed Seats	251,908	338,726	420,670	486,978	533,590	570,700	622,900	691,700	764,000	828,400	21	9
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	17.3	17.9	10.7	11.2	8.6	8.3	7.8	7.6	7.5	7.5	-16	-3
Hardware-Only ASP	3.9	3.3	3.0	2.9	2.6	2.6	2.6	2.5	2.5	2.5	-10	-1
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	428	432	430	441	453	507	553	599	641	670	1	8
CPU Revenue	404	401	391	400	421	472	516	559	599	625	1	8
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	25	31	39	41	32	35	37	39	42	45	7	7
Software Revenue	198	264	297	351	404	463	518	571	618	652	20	10
Bundled	27	28	26	46	56	63	70	77	86	92	21	10
Unbundled	171	236	271	305	348	400	448	494	532	561	19	10
Service Revenue	32	36	25	39	43	51	60	69	80	88	8	15
Total Factory Revenue	658	733	751	831	900	1,021	1,131	1,239	1,339	1,410	8	9
Increase over Prior Year (%)	35	11	3	11	8	13	11	10	8	5		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 33
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: North America
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	48,494	58,022	63,670	64,131	69,504	74,900	80,500	86,200	91,100	95,900	9	7
Unit Shipments or Seats	49,764	59,677	65,086	65,186	70,473	75,700	81,200	86,800	91,600	96,300	9	6
CPU Installed Base	152,880	193,491	230,716	256,443	268,473	272,500	282,300	300,100	319,800	338,400	15	5
Installed Seats	163,941	205,096	242,212	267,180	278,259	281,100	289,700	306,400	324,900	342,500	14	4
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	70.5	54.0	49.6	39.9	22.0	19.0	17.3	16.3	15.8	15.7	-25	-7
Hardware-Only ASP	4.7	4.0	4.0	4.2	4.1	3.9	3.8	3.7	3.6	3.5	-3	-3
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	380	374	397	383	342	345	355	369	384	400	-3	3
CPU Revenue	315	303	332	318	289	294	304	319	333	348	-2	4
Terminal Revenue	20	20	21	27	19	17	15	13	11	9	-1	-14
Peripheral Revenue (Turnkey)	45	51	44	38	34	34	35	37	40	42	-7	5
Software Revenue	157	191	223	228	230	242	260	280	299	317	10	7
Bundled	57	62	69	59	56	57	63	69	75	79	-1	7
Unbundled	99	129	154	168	174	185	197	211	224	238	15	6
Service Revenue	103	114	115	105	101	100	107	117	128	139	-1	7
Total Factory Revenue	640	680	735	715	672	688	721	766	811	856	1	5
Increase over Prior Year (%)	1	6	8	-3	-6	2	5	6	6	6		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 34
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: North America
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	4,085	5,048	6,607	6,757	6,709	7,100	8,000	9,200	10,500	11,900	13	12
Unit Shipments or Seats	4,085	5,048	6,607	6,757	6,709	7,100	8,000	9,200	10,500	11,900	13	12
CPU Installed Base	12,072	16,059	21,104	25,538	29,252	32,300	35,400	39,100	43,000	47,300	25	10
Installed Seats	12,072	16,059	21,104	25,538	29,252	32,300	35,400	39,100	43,000	47,300	25	10
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	57.2	44.4	43.9	42.4	33.0	31.2	29.3	27.8	26.9	26.1	-13	-5
Hardware-Only ASP	16.6	17.8	15.1	15.2	15.0	14.4	13.8	13.3	12.7	12.2	-2	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	142	143	160	150	117	116	123	134	148	162	-5	7
CPU Revenue	109	110	140	131	100	100	106	116	128	140	-2	7
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	33	32	20	19	17	17	17	18	20	22	-14	4
Software Revenue	57	68	87	83	76	78	84	93	103	113	8	8
Bundled	43	47	54	46	37	35	37	39	42	44	-4	3
Unbundled	14	21	33	37	39	42	47	54	62	70	29	12
Service Revenue	65	79	80	82	79	78	84	92	101	111	5	7
Total Factory Revenue	264	290	327	314	272	272	291	319	352	386	1	7
Increase over Prior Year (%)	10	10	13	-4	-13	0	7	10	10	10		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 35
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: North America
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	479	477	233	240	381	400	300	300	300	200	-6	-12
Unit Shipments or Seats	1,749	2,132	1,649	1,295	1,351	1,200	1,000	900	800	700	-6	-12
CPU Installed Base	2,313	2,484	2,388	2,308	2,367	2,400	2,400	2,400	2,400	2,300	1	-1
Installed Seats	13,374	14,089	13,885	13,045	12,153	11,000	9,800	8,700	7,500	6,400	-2	-12
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	330.3	219.9	245.3	383.3	231.8	211.0	193.7	177.6	162.6	149.6	-8	-8
Hardware-Only ASP	107.8	118.4	265.8	200.2	146.0	138.7	131.8	125.2	119.0	113.0	8	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	75	67	53	52	57	51	45	39	33	29	-6	-13
CPU Revenue	46	39	27	24	38	33	29	26	22	19	-5	-13
Terminal Revenue	20	20	21	27	19	17	15	13	11	9	-1	-14
Peripheral Revenue (Turnkey)	9	8	5	1	1	0	0	0	0	1	-50	-2
Software Revenue	21	21	13	12	8	6	5	4	3	2	-20	-23
Bundled	14	14	6	2	2	1	1	1	1	1	-37	-16
Unbundled	7	7	7	9	6	5	4	3	2	1	-3	-26
Service Revenue	28	24	16	11	12	10	9	8	7	6	-19	-12
Total Factory Revenue	123	112	82	74	78	68	59	51	43	37	-11	-14
Increase over Prior Year (%)	-23	-9	-27	-9	5	-13	-14	-13	-16	-13		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 36
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: North America
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	408	572	356	400	500	700	800	900	NA	20
Unit Shipments or Seats	NA	NA	408	572	356	400	500	700	800	900	NA	20
CPU Installed Base	NA	NA	408	980	1,302	1,700	2,000	2,500	2,900	3,300	NA	20
Installed Seats	NA	NA	408	980	1,302	1,700	2,000	2,500	2,900	3,300	NA	20
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	59.1	50.9	43.3	40.7	38.4	36.7	35.6	34.9	NA	-4
Hardware-Only ASP	NA	NA	NA	35.5	31.3	30.7	30.1	29.5	28.9	28.3	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	17	20	8	8	9	10	12	13	NA	11
CPU Revenue	NA	NA	14	17	6	6	7	8	9	10	NA	11
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	3	3	2	2	2	2	3	3	NA	12
Software Revenue	NA	NA	8	9	8	9	12	14	16	18	NA	18
Bundled	NA	NA	8	9	8	9	12	14	16	18	NA	18
Unbundled	NA	NA	NA	0	0	0	0	0	0	0	NA	53
Service Revenue	NA	NA	15	9	7	8	9	11	12	13	NA	15
Total Factory Revenue	NA	NA	39	38	22	25	30	35	40	44	NA	15
Increase over Prior Year (%)	NA	NA	NA	-2	-43	15	20	17	15	10		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 37
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: North America
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	43,930	52,497	56,423	56,562	62,058	67,000	71,700	76,000	79,500	82,800	9	6
Unit Shipments or Seats	43,930	52,497	56,423	56,562	62,058	67,000	71,700	76,000	79,500	82,800	9	6
CPU Installed Base	138,495	174,948	206,815	227,617	235,553	236,100	242,500	256,200	271,600	285,600	14	4
Installed Seats	138,495	174,948	206,815	227,617	235,553	236,100	242,500	256,200	271,600	285,600	14	4
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	22.5	21.6	13.9	7.1	5.7	5.5	5.3	5.1	5.0	4.9	-29	-3
Hardware-Only ASP	3.7	3.1	2.9	2.8	2.6	2.5	2.5	2.4	2.4	2.4	-9	-1
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	163	165	166	161	160	170	178	185	191	196	-1	4
CPU Revenue	160	155	150	146	146	155	162	169	175	179	-2	4
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	3	10	16	16	14	15	15	16	17	17	45	4
Software Revenue	79	101	115	124	137	148	159	169	176	183	15	6
Bundled	1	1	1	3	9	11	13	15	16	17	71	14
Unbundled	78	100	115	122	129	138	146	154	160	167	13	5
Service Revenue	11	11	4	2	3	4	5	6	8	9	-26	22
Total Factory Revenue	252	277	286	288	300	322	342	360	375	388	4	5
Increase over Prior Year (%)	9	10	3	1	4	7	6	5	4	3		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 38
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Europe
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	37,324	48,428	51,628	61,534	76,372	89,300	101,300	112,900	123,600	131,100	20	11
Unit Shipments or Seats	38,402	49,691	52,626	62,193	76,855	89,500	101,500	113,100	123,800	131,200	19	11
CPU Installed Base	97,685	138,242	175,126	211,727	246,045	280,700	322,100	368,800	414,400	453,000	26	13
Installed Seats	102,625	144,481	182,130	218,921	252,961	286,900	327,300	373,000	417,600	455,300	25	12
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	55.2	44.9	42.4	34.4	23.4	21.6	20.2	19.1	18.4	18.2	-19	-5
Hardware-Only ASP	5.5	4.4	4.9	4.3	4.2	3.9	3.7	3.6	3.6	3.5	-7	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	364	392	446	459	440	461	487	518	554	586	5	6
CPU Revenue	298	332	379	397	398	423	449	479	514	544	8	6
Terminal Revenue	16	14	20	12	9	4	3	3	2	2	-13	-28
Peripheral Revenue (Turnkey)	51	45	47	50	34	34	34	36	38	40	-10	4
Software Revenue	185	225	280	335	367	403	441	481	522	556	19	9
Bundled	86	95	117	152	127	127	133	140	147	155	10	4
Unbundled	99	130	163	183	240	276	309	342	375	400	25	11
Service Revenue	89	110	125	151	161	166	174	185	201	219	16	6
Total Factory Revenue	638	726	850	944	968	1,029	1,101	1,184	1,277	1,361	11	7
Increase over Prior Year (%)	18	14	17	11	3	6	7	7	8	7		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (April 1994)

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Table 39
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Europe
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	5,546	6,652	9,480	11,121	12,656	13,500	14,700	16,200	18,100	20,400	23	10
Unit Shipments or Seats	5,546	6,652	9,480	11,121	12,656	13,500	14,700	16,200	18,100	20,400	23	10
CPU Installed Base	12,528	18,505	26,669	35,709	44,635	53,100	60,900	69,000	76,700	83,800	37	13
Installed Seats	12,414	18,505	26,669	35,709	44,635	53,100	60,900	69,000	76,700	83,800	38	13
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	49.1	42.2	43.8	41.5	34.7	33.2	31.2	29.6	28.5	27.7	-8	-4
Hardware-Only ASP	17.6	19.3	17.4	16.8	16.2	15.5	14.9	14.3	13.7	13.2	-2	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	152	177	225	239	223	228	233	244	263	286	10	5
CPU Revenue	119	147	198	209	202	207	212	222	240	262	14	5
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	33	30	27	30	21	21	21	22	23	25	-10	3
Software Revenue	87	98	146	174	176	181	190	203	219	237	19	6
Bundled	60	68	89	119	93	93	97	102	107	113	12	4
Unbundled	27	30	57	55	83	88	93	101	112	124	32	8
Service Revenue	57	75	86	118	129	133	138	145	158	173	23	6
Total Factory Revenue	296	350	457	532	528	543	561	592	640	697	16	6
Increase over Prior Year (%)	31	18	30	16	-1	3	3	6	8	9		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 40
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Europe
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	336	430	190	104	78	0	0	0	0	0	-31	-100
Unit Shipments or Seats	1,415	1,693	1,188	763	561	300	300	200	200	100	-21	-29
CPU Installed Base	1,410	1,790	1,870	1,797	1,650	1,500	1,200	1,000	900	700	4	-16
Installed Seats	6,488	8,029	8,874	8,991	8,566	7,600	6,500	5,300	4,100	3,000	7	-19
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	338.8	205.1	484.9	520.9	466.0	419.0	385.0	354.3	325.0	298.7	8	-9
Hardware-Only ASP	127.0	111.3	264.5	299.2	336.8	352.2	335.0	321.8	305.3	295.1	28	-3
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	67	57	62	39	28	15	12	10	8	6	-20	-25
CPU Revenue	44	37	38	25	18	10	8	7	5	4	-20	-25
Terminal Revenue	16	14	20	12	9	4	3	3	2	2	-13	-28
Peripheral Revenue (Turnkey)	8	6	4	2	1	1	1	1	0	0	-40	-21
Software Revenue	22	19	16	9	6	4	3	2	1	1	-28	-32
Bundled	18	15	11	7	4	2	2	1	1	1	-31	-32
Unbundled	4	4	5	3	2	1	1	1	0	0	-17	-33
Service Revenue	22	21	18	12	8	5	4	3	3	2	-21	-24
Total Factory Revenue	110	98	96	60	42	23	19	15	12	9	-21	-26
Increase over Prior Year (%)	-18	-12	-2	-38	-30	-44	-20	-21	-21	-20		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (April 1994)

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Table 41
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Europe
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	217	316	330	400	400	400	500	600	NA	13
Unit Shipments or Seats	NA	NA	217	316	330	400	400	400	500	600	NA	13
CPU Installed Base	NA	NA	217	533	843	1,200	1,400	1,700	1,900	2,100	NA	20
Installed Seats	NA	NA	217	533	843	1,200	1,400	1,700	1,900	2,100	NA	20
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	89.1	64.6	57.9	54.4	51.5	49.1	47.6	46.7	NA	-4
Hardware-Only ASP	NA	NA	NA	39.5	.0	.0	.0	.0	.0	.0	NA	NA
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	13	14	10	10	10	11	11	12	NA	4
CPU Revenue	NA	NA	11	12	8	8	8	8	9	10	NA	4
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	2	2	2	2	2	2	2	2	NA	3
Software Revenue	NA	NA	6	6	9	10	10	12	13	15	NA	11
Bundled	NA	NA	6	6	9	9	10	11	12	14	NA	9
Unbundled	NA	NA	NA	0	0	0	0	0	1	1	NA	NA
Service Revenue	NA	NA	9	7	8	8	8	9	9	11	NA	7
Total Factory Revenue	NA	NA	29	27	27	27	28	31	34	38	NA	7
Increase over Prior Year (%)	NA	NA	NA	-6	-2	3	4	8	10	12		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 42
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Europe
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	31,442	41,346	41,742	49,993	63,309	75,300	86,200	96,300	105,000	110,100	19	12
Unit Shipments or Seats	31,442	41,346	41,742	49,993	63,309	75,300	86,200	96,300	105,000	110,100	19	12
CPU Installed Base	83,746	117,947	146,371	173,688	198,917	225,000	258,400	297,100	334,900	366,300	24	13
Installed Seats	83,723	117,947	146,371	173,688	198,917	225,000	258,400	297,100	334,900	366,300	24	13
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	24.7	25.8	15.1	12.6	7.8	7.5	7.1	6.9	6.7	6.7	-25	-3
Hardware-Only ASP	4.1	3.3	3.1	2.9	2.6	2.6	2.6	2.5	2.5	2.4	-11	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	145	157	146	167	179	208	231	253	272	281	5	9
CPU Revenue	135	148	132	151	170	197	220	242	260	268	6	10
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	10	9	14	16	9	10	11	12	12	13	-2	7
Software Revenue	76	107	111	145	176	209	238	265	289	302	23	11
Bundled	9	12	10	20	21	22	24	25	27	28	24	6
Unbundled	67	95	101	125	155	186	214	240	262	275	23	12
Service Revenue	10	14	12	14	16	20	24	27	31	34	11	16
Total Factory Revenue	232	278	268	326	371	436	493	546	592	617	13	11
Increase over Prior Year (%)	29	20	-4	21	14	17	13	11	8	4		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 43
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Asia
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	16,471	21,909	28,518	28,612	31,842	37,100	42,400	48,300	54,300	59,600	18	13
Unit Shipments or Seats	17,683	22,890	29,601	29,675	33,297	38,400	43,600	49,400	55,400	60,500	17	13
CPU Installed Base	30,441	50,489	75,228	96,155	112,441	125,900	140,700	159,200	180,600	201,900	39	12
Installed Seats	33,511	54,558	80,273	101,998	119,304	133,500	148,900	167,700	189,000	209,900	37	12
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	34.9	35.1	27.0	30.8	31.0	29.3	27.4	25.9	24.7	24.0	-3	-5
Hardware-Only ASP	6.8	5.8	5.0	5.1	5.6	5.2	4.9	4.7	4.7	4.6	-5	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	277	331	331	357	358	386	413	447	494	536	7	8
CPU Revenue	215	256	264	293	283	307	331	360	399	432	7	9
Terminal Revenue	19	13	16	12	18	17	17	16	17	17	-2	-0
Peripheral Revenue (Turnkey)	43	62	51	51	58	62	65	71	79	86	8	8
Software Revenue	109	146	157	174	214	233	253	276	303	324	18	9
Bundled	80	102	96	108	130	136	145	155	170	181	13	7
Unbundled	30	45	61	66	84	96	108	121	134	144	30	11
Service Revenue	48	68	67	94	119	128	139	151	169	184	25	9
Total Factory Revenue	434	546	556	625	691	746	804	874	967	1,044	12	9
Increase over Prior Year (%)	48	26	2	12	11	8	8	9	11	8		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 44
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Asia
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	2,665	4,678	4,413	5,331	5,750	6,400	7,300	8,200	9,500	10,600	21	13
Unit Shipments or Seats	2,665	4,678	4,413	5,331	5,750	6,400	7,300	8,200	9,500	10,600	21	13
CPU Installed Base	3,977	8,486	12,589	17,176	21,475	25,600	29,600	33,500	38,000	42,300	52	15
Installed Seats	3,924	8,486	12,589	17,176	21,475	25,600	29,600	33,500	38,000	42,300	53	15
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	50.1	40.5	43.5	47.5	53.9	50.9	47.9	45.5	43.9	42.6	2	-5
Hardware-Only ASP	25.4	51.7	24.0	26.6	25.2	24.1	23.1	22.2	21.3	20.4	-0	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	88	132	128	176	191	201	212	228	255	276	21	8
CPU Revenue	66	92	96	140	148	156	165	177	197	214	23	8
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	22	40	33	36	43	45	48	51	57	62	18	8
Software Revenue	45	62	64	75	102	110	119	130	144	155	23	9
Bundled	42	58	58	63	80	85	92	100	111	118	18	8
Unbundled	3	3	6	12	22	24	27	29	34	37	67	11
Service Revenue	18	34	34	42	67	72	77	84	95	104	39	9
Total Factory Revenue	150	228	226	292	360	383	408	443	494	535	24	8
Increase over Prior Year (%)	72	52	-1	29	23	6	7	8	12	8		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 45
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Asia
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	251	1,185	1,006	869	886	1,000	1,100	1,200	1,400	1,600	37	13
Unit Shipments or Seats	1,463	2,167	2,089	1,931	2,341	2,300	2,300	2,300	2,400	2,500	12	1
CPU Installed Base	977	2,111	3,021	3,770	4,497	5,300	6,000	6,500	7,200	8,100	46	12
Installed Seats	4,108	6,180	8,066	9,613	11,360	12,900	14,100	15,100	15,600	16,000	29	7
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	560.6	102.2	94.1	98.0	74.0	69.7	63.9	58.6	53.6	49.4	-40	-8
Hardware-Only ASP	132.8	121.3	355.8	282.5	333.8	317.0	301.1	286.1	271.8	258.1	26	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	75	96	89	73	59	62	66	69	74	80	-6	6
CPU Revenue	47	73	64	55	35	39	42	44	48	52	-7	8
Terminal Revenue	19	13	16	12	18	17	17	16	17	17	-2	-0
Peripheral Revenue (Turnkey)	9	10	8	6	7	7	8	8	9	10	-7	9
Software Revenue	25	33	26	23	29	25	23	20	18	17	3	-10
Bundled	21	28	20	20	23	21	19	17	15	14	2	-9
Unbundled	4	5	6	4	6	5	4	4	3	3	9	-13
Service Revenue	20	24	22	25	24	25	25	26	27	28	5	3
Total Factory Revenue	120	153	136	122	112	112	114	115	119	125	-2	2
Increase over Prior Year (%)	-10	27	-11	-11	-8	1	2	1	4	5		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 46
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Asia
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	143	146	153	200	200	200	300	300	NA	14
Unit Shipments or Seats	NA	NA	143	146	153	200	200	200	300	300	NA	14
CPU Installed Base	NA	NA	143	289	433	600	700	900	1,000	1,100	NA	21
Installed Seats	NA	NA	143	289	433	600	700	900	1,000	1,100	NA	21
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	58.3	72.5	59.1	55.5	52.5	50.0	48.4	47.5	NA	-4
Hardware-Only ASP	NA	NA	NA	36.9	32.3	31.8	31.1	30.5	29.9	29.3	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	5	6	5	5	6	6	7	8	NA	9
CPU Revenue	NA	NA	4	6	5	5	5	6	6	7	NA	9
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	1	1	1	1	1	1	1	1	NA	8
Software Revenue	NA	NA	3	2	3	3	3	4	4	5	NA	13
Bundled	NA	NA	3	2	2	2	3	3	3	4	NA	13
Unbundled	NA	NA	NA	0	1	1	1	1	1	1	NA	11
Service Revenue	NA	NA	3	4	4	5	5	6	7	7	NA	11
Total Factory Revenue	NA	NA	11	13	12	13	14	16	18	20	NA	11
Increase over Prior Year (%)	NA	NA	NA	16	-9	10	10	11	11	11		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (April 1994)

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Table 47
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Asia
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	13,555	16,046	22,955	22,266	25,053	29,500	33,900	38,600	43,200	47,100	17	13
Unit Shipments or Seats	13,555	16,046	22,955	22,266	25,053	29,500	33,900	38,600	43,200	47,100	17	13
CPU Installed Base	25,487	39,891	59,475	74,920	86,036	94,400	104,400	118,300	134,400	150,400	36	12
Installed Seats	25,479	39,891	59,475	74,920	86,036	94,400	104,400	118,300	134,400	150,400	36	12
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	15.9	15.5	9.4	10.8	10.9	10.6	10.0	9.7	9.5	9.4	-9	-3
Hardware-Only ASP	4.7	3.8	3.4	3.2	2.9	2.9	2.8	2.8	2.8	2.7	-11	-1
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	114	102	109	101	103	117	128	143	159	172	-3	11
CPU Revenue	103	91	100	93	95	108	119	133	147	159	-2	11
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	12	11	9	9	8	9	9	10	12	13	-8	10
Software Revenue	39	52	65	73	81	95	108	122	136	148	20	13
Bundled	17	16	15	23	26	28	32	35	41	45	11	12
Unbundled	23	36	50	50	55	66	76	87	96	104	25	13
Service Revenue	11	10	9	23	24	27	31	35	40	45	22	14
Total Factory Revenue	164	165	182	198	208	238	267	300	335	365	6	12
Increase over Prior Year (%)	125	0	11	8	5	15	12	12	12	9		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 48
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Rest of World
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,937	2,522	3,347	4,568	4,980	5,800	6,800	7,900	8,900	10,000	27	15
Unit Shipments or Seats	2,057	2,650	3,495	4,617	4,999	5,800	6,800	7,900	8,900	10,000	25	15
CPU Installed Base	5,135	7,045	9,516	12,844	15,653	18,300	21,200	24,600	28,400	32,200	32	16
Installed Seats	5,813	7,809	10,367	13,656	16,375	18,900	21,700	25,000	28,600	32,300	30	15
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	68.1	52.4	51.9	41.0	22.1	20.0	18.5	17.9	17.7	18.0	-25	-4
Hardware-Only ASP	5.8	4.9	4.9	4.2	3.7	3.6	3.6	3.5	3.4	3.3	-11	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	24	19	28	31	27	30	33	38	43	49	3	13
CPU Revenue	18	14	23	27	23	26	29	34	38	43	6	13
Terminal Revenue	2	2	3	1	0	0	0	0	0	0	-43	-24
Peripheral Revenue (Turnkey)	4	2	3	3	3	3	4	4	5	6	-5	14
Software Revenue	9	9	13	19	19	22	25	29	33	38	20	15
Bundled	5	3	4	6	6	7	9	10	12	15	5	19
Unbundled	4	6	9	12	13	14	17	19	21	23	32	13
Service Revenue	8	6	9	10	11	13	14	17	19	23	9	15
Total Factory Revenue	41	33	50	60	57	64	73	84	96	109	8	14
Increase over Prior Year (%)	31	-20	52	20	-6	13	14	15	15	14		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 49
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Rest of World
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	287	203	440	640	624	700	800	1,000	1,100	1,300	21	16
Unit Shipments or Seats	287	203	440	640	624	700	800	1,000	1,100	1,300	21	16
CPU Installed Base	806	956	1,290	1,804	2,212	2,700	3,200	3,800	4,400	5,000	29	18
Installed Seats	806	956	1,290	1,804	2,212	2,700	3,200	3,800	4,400	5,000	29	18
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	57.8	44.6	49.2	43.5	34.1	32.2	30.3	28.8	27.8	26.9	-12	-5
Hardware-Only ASP	18.3	21.2	15.9	15.3	14.7	14.1	13.5	13.0	12.5	12.0	-5	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	12	6	12	15	11	12	13	15	17	19	-1	11
CPU Revenue	9	5	11	13	10	11	12	13	15	17	3	11
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	3	2	2	2	1	2	2	2	2	3	-16	13
Software Revenue	4	3	6	8	8	9	10	11	12	14	16	12
Bundled	4	2	3	5	4	4	4	5	6	7	-2	14
Unbundled	0	1	3	4	4	5	5	6	7	7	77	11
Service Revenue	6	4	6	8	9	10	12	13	15	17	14	13
Total Factory Revenue	21	13	24	32	28	31	35	39	44	50	7	12
Increase over Prior Year (%)	45	-40	91	31	-10	10	11	13	14	13		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 50
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Rest of World
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	33	40	18	8	3	0	0	0	0	0	-44	-100
Unit Shipments or Seats	153	168	166	57	22	0	0	0	0	0	-38	-100
CPU Installed Base	119	150	154	146	132	100	100	100	100	0	3	-100
Installed Seats	797	914	1,005	959	853	700	600	400	300	200	2	-25
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	348.9	190.8	203.5	384.0	335.9	305.8	280.7	257.3	235.6	216.8	-1	-8
Hardware-Only ASP	137.8	120.0	349.9	222.6	224.6	213.3	202.7	192.5	182.9	173.8	13	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	6	5	5	2	1	1	1	0	0	0	-39	-20
CPU Revenue	3	3	2	1	1	0	0	0	0	0	-35	-19
Terminal Revenue	2	2	3	1	0	0	0	0	0	0	-43	-24
Peripheral Revenue (Turnkey)	1	0	0	0	0	0	0	0	0	0	-52	-13
Software Revenue	2	2	1	1	0	0	0	0	0	0	-44	-31
Bundled	1	1	0	0	0	0	0	0	0	0	-37	-29
Unbundled	1	1	1	0	0	0	0	0	0	0	-61	-100
Service Revenue	2	2	1	1	0	0	0	0	0	0	-40	-20
Total Factory Revenue	10	8	7	3	1	1	1	1	0	0	-40	-21
Increase over Prior Year (%)	-12	-19	-11	-59	-57	-29	-13	-11	-35	-15		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 51
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Rest of World
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	63	78	90	100	200	200	300	400	NA	35
Unit Shipments or Seats	NA	NA	63	78	90	100	200	200	300	400	NA	35
CPU Installed Base	NA	NA	63	141	226	300	500	600	800	1,000	NA	35
Installed Seats	NA	NA	63	141	226	300	500	600	800	1,000	NA	35
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	44.9	51.8	49.5	46.5	44.0	42.0	40.7	39.9	NA	-4
Hardware-Only ASP	NA	NA	NA	49.3	30.9	30.3	29.7	29.1	28.5	28.0	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	3	3	3	4	4	5	7	8	NA	24
CPU Revenue	NA	NA	3	2	2	3	3	4	5	7	NA	24
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	0	0	1	1	1	1	1	1	NA	24
Software Revenue	NA	NA	0	1	1	2	3	3	4	5	NA	30
Bundled	NA	NA	0	1	1	2	2	3	4	5	NA	30
Unbundled	NA	NA	NA	0	0	0	0	0	0	0	NA	28
Service Revenue	NA	NA	1	1	1	2	2	3	4	5	NA	27
Total Factory Revenue	NA	NA	4	5	6	7	9	11	14	18	NA	26
Increase over Prior Year (%)	NA	NA	NA	36	9	24	24	26	28	28		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (April 1994)

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Table 52
CAD/CAM/CAE/GIS History and Forecast

Application: AEC
Region: Rest of World
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,618	2,279	2,827	3,842	4,263	5,000	5,800	6,700	7,500	8,300	27	14
Unit Shipments or Seats	1,618	2,279	2,827	3,842	4,263	5,000	5,800	6,700	7,500	8,300	27	14
CPU Installed Base	4,210	5,940	8,009	10,753	13,084	15,200	17,500	20,200	23,100	26,100	33	15
Installed Seats	4,210	5,940	8,009	10,753	13,084	15,200	17,500	20,200	23,100	26,100	33	15
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	20.5	16.4	27.5	7.0	5.8	5.6	5.3	5.2	5.1	5.0	-27	-3
Hardware-Only ASP	3.9	3.2	3.0	3.0	2.7	2.7	2.6	2.6	2.6	2.5	-8	-1
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	6	7	9	12	12	13	15	17	19	21	16	12
CPU Revenue	6	7	8	10	11	12	14	16	17	19	14	12
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	0	0	1	1	1	1	1	1	2	2	77	12
Software Revenue	3	4	6	8	10	11	13	15	17	19	34	14
Bundled	0	0	0	0	1	1	2	2	3	3	64	19
Unbundled	3	4	6	8	8	10	11	13	14	16	31	13
Service Revenue	0	1	0	0	0	0	0	1	1	1	-13	32
Total Factory Revenue	10	12	15	20	21	25	29	33	37	40	22	13
Increase over Prior Year (%)	83	25	21	37	6	16	15	15	12	10		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (April 1994)

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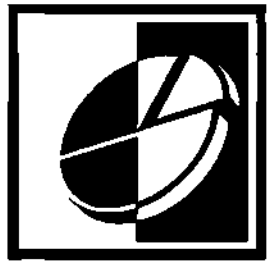

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Note: All tables show estimated data.

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CAD/CAM/CAE and GIS AEC and GIS Forecast Update

Fluctuating exchange rates masked true market performance in the 1993 CAD/CAM/CAE and GIS market. Japanese CAD/CAM/CAE and GIS total revenue grew a surprising 2.8 percent from 1992 to 1993 when measured in U.S. dollars, contrary to what would be expected in the worst recession Japan has experienced in 50 years. However, the dollar depreciated against the yen at a rate of 12.3 percent, so when measured in yen, Japanese CAD/CAM/CAE and GIS total revenue declined 9.8 percent from 1992 to 1993.

In the meantime, European CAD/CAM/CAE and GIS total revenue declined 7.8 percent from 1992 to 1993 when measured in U.S. dollars. With the dollar appreciating 10.0 percent against the ECU, European CAD/CAM/CAE and GIS total revenue grew 2.8 percent from 1992 to 1993 when measured in ECU. Table 1 shows the dramatic impact that currency fluctuation has on the CAD/CAM/CAE and GIS.

The yen has been strengthening against the dollar for the past three years, changing in 1993 at a rate twice that of previous years. And the end is not in sight. In contrast, Hong Kong and Singapore had relatively stable currency during 1993, while the currencies in China, Korea, and Taiwan weakened against the dollar. In Europe, 1993 was a year for weakening of local currencies against the dollar after having currencies strengthened against the dollar in 1992.

The midyear indications are that currencies are beginning to stabilize (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 June exchange rate will apply for the future.

Dataquest's forecast is based on the updated market share data, gathered in March and April of this year. It includes country-level forecast for Asia and Europe.

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.

The CAD/CAM/CAE and GIS *Dataquest Perspective* (CCAM-WW-DP-9404), available in September, contains additional tables and analysis and is a companion piece to this book.

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

	1992	1993	Forecast 1998	Growth (%) 1992-1993	Growth (%) 1993-1998
Europe (U.S.$ Million)					
Software Revenue	1,693.8	1,608.7	2,231.4	-5.0	6.8
Hardware Revenue	3,037.8	2,701.7	3,388.8	-11.1	4.6
Service Revenue	1,106.6	1,072.2	1,381.4	-3.1	5.2
Total Factory Revenue	5,838.2	5,382.6	7,001.6	-7.8	5.4
ECU/U.S.$ Exchange Rate	*0.7686*	*0.8566*	*0.8419**	*11.4*	*-0.3*
Europe (ECU Million)					
Software Revenue	1,301.8	1,378.0	1,878.6	5.9	6.4
Hardware Revenue	2,334.9	2,314.3	2,853.0	-0.9	4.3
Service Revenue	850.5	918.5	1,163.0	8.0	4.8
Total Factory Revenue	4,487.3	4,610.8	5,894.6	2.8	5.0
Japan (U.S.$ Million)					
Software Revenue	1,270.4	1,371.2	2,010.2	7.9	8.0
Hardware Revenue	2,420.1	2,397.0	2,759.8	-1.0	2.9
Service Revenue	617.4	665.5	887.7	7.8	5.9
Total Factory Revenue	4,317.8	4,438.8	5,657.8	2.8	5.0
Yen/U.S.$ Exchange Rate	*126.34*	*110.85*	*101.56**	*-12.3*	*-1.7*
Japan (Yen Million)					
Software Revenue	160,506	152,001	204,155	-5.3	6.1
Hardware Revenue	305,752	265,706	280,289	-13.1	1.1
Service Revenue	78,000	73,768	90,158	-5.4	4.1
Total Factory Revenue	545,508	492,037	574,603	-9.8	3.2
North America (U.S.$ Million)					
Software Revenue	1,562.5	1,754.6	3,085.6	12.3	12.0
Hardware Revenue	2,672.1	2,824.5	4,477.9	5.7	9.7
Service Revenue	931.5	1,092.3	1,904.2	17.3	11.8
Total Factory Revenue	5,166.6	5,671.3	9,467.7	9.8	10.8
Worldwide (U.S.$ Million)					
Software Revenue	4,717.1	5,021.5	7,956.1	6.5	9.6
Hardware Revenue	8,424.4	8,308.7	11,367.1	-1.4	6.5
Service Revenue	2,776.3	2,989.5	4,496.3	7.7	8.5
Total Factory Revenue	15,928.3	16,325.7	23,819.0	2.5	7.8

*Assuming a stable currency, the 1998 exchange rate is the June 1994 exchange rate.

Source: Dataquest (September 1994)

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Table 2
Foreign Currency/U.S. Dollar

		Actual				Current	Current	Year-to-Year Change (%)				
		1990	1991	1992	1993	1994	1995-1998	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995
European Community	ECU	NA	0.8079	0.7686	0.8566	0.8561	0.8419		-5	11	0	-2
France	Franc	5.4277	5.6183	5.2571	5.6641	5.6343	5.5346	4	-6	8	-1	-2
Germany	Mark	1.6111	1.6523	1.5513	1.6543	1.6485	1.6163	3	-6	7	0	-2
Italy	Lira	1195.03	1235.03	1220.85	1575.05	1610.71	1584.79	3	-1	29	2	-2
Netherlands	Guilder	1.81	1.86	1.75	1.86	1.85	1.8126	3	-6	6	0	-2
Spain	Peseta	101.70	103.48	101.50	127.10	135.40	133.39	2	-2	25	7	-1
Sweden	Krona	5.9137	6.0314	5.7770	7.8003	7.7955	7.7340	2	-4	35	0	-1
United Kingdom	Pound	0.5599	0.5658	0.5652	0.6665	0.6604	0.6549	1	0	18	-1	-1
China	Renminbi	4.7912	5.3340	5.5076	5.7580	8.5534	8.6895	11	3	5	49	2
Hong Kong	Dollar	7.7900	7.7712	7.7399	7.7351	7.7271	7.7280	0	0	0	0	0
Japan	Yen	144.05	134.59	126.34	110.85	103.08	101.56	-7	-6	-12	-7	-1
Korea	Won	242.70	730.67	782.41	799.42	806.49	805.80	201	7	2	1	0
Singapore	Dollar	1.8129	1.7277	1.6284	1.6155	1.5481	1.5300	-5	-6	-1	-4	-1
Taiwan	Dollar	26.64	26.49	24.93	26.15	26.77	26.98	-1	-6	5	2	1

NA = Not applicable

Source: Dataquest (September 1994)

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A new forecasting process for each application is being used to improve revenue and unit shipment control by region and by platform. This new process may cause some mismatch in market share tables and forecast tables. Please use the forecast tables to understand the year-to-year changes. Use the market share tables to compare company-to-company performance.

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:

- "Bottom-up" aggregation—This method involves adding all relevant vendor contributions to arrive at total market estimates for all historical data.
- Segment forecasting—For each application segment tracked by the CAD/CAM/CAE and GIS group, individual forecasts are derived following the basic information model defined previously. Specifically, each design phase covered within each application is segmented by product, region, and platform. 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. Installed base is also evaluated. Rates of product retirement are primarily based on input from end users in our ongoing survey programs. Dataquest analysts also factor in the acceptance or ability for users to consume new technology.

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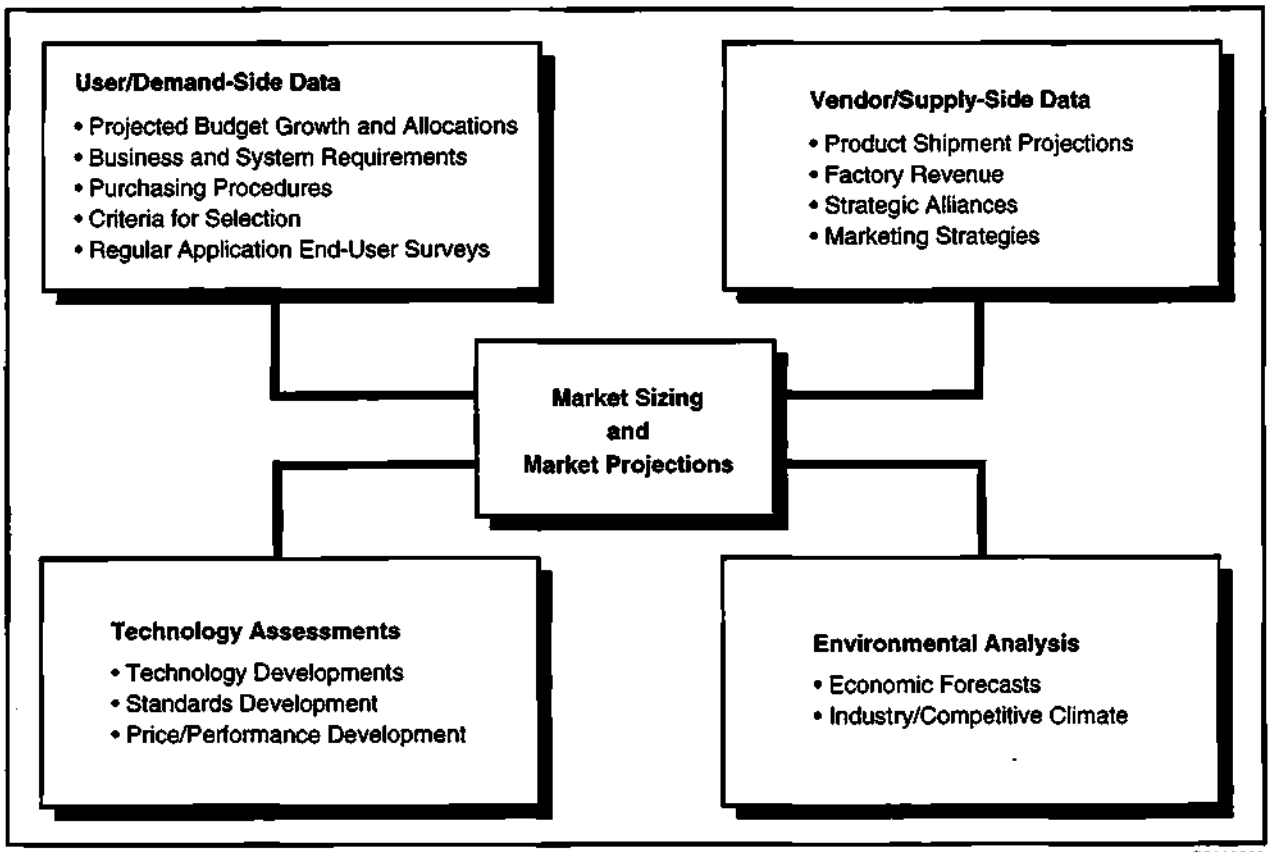
Figure 1
CAD/CAM/CAE and GIS Forecasting Model



Source: Dataquest (September 1994) G3000529

- 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

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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 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 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 (which includes Austria, Switzerland, and eastern Europe)

Asia

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

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Rest of World

Rest of World includes all other countries and regions, including Australia, New Zealand, Oceania, 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.

Server

A server is a computer that transparently provides its resources for use by other computer systems. It is a system on a network that provides specific functionality to other computer systems: the clients. Functions include file storage, database access, and compute capability. Dataquest tracks the following major categories of servers used for CAD/CAM/CAE and GIS applications:

- Compute servers—These systems provide capabilities for solving numerical problems (for example, simulations, statistical calculations, and simultaneous partial differential equations). System features usually include high-speed computational capabilities (for example, vector and parallel processing) and large memories.
- Print servers—These systems provide access to printers, specialized printing applications software, and print-spooling resources to a network.
- File servers—These systems provide mass storage capability to clients on a network. Services can range from temporary storage of working files to long-term backup and archive systems.
- Database servers—These systems manage databases as a shared resource to a network. These servers handle such functions as physical data storage, data security, and high-level queries and can access stored information at the record level.

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.

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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. (In the case of technical workstations and personal computers, CPU revenue contains the terminal revenue.)
- 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 of a 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-dependent platform, as terminal revenue is contained within CPU revenue for technical workstations and PCs.
- Software revenue is revenue derived from the sale of bundled (part of a turnkey system) and unbundled software.
- Service revenue is defined as revenue derived from the service and support of CAD/CAM/CAE or GIS systems. Service revenue can be calculated in the tables by subtracting hardware and software revenue from total revenue.
- Total factory revenue is defined as the amount of money received by a manufacturer for its goods measured in U.S. dollars and is the sum of hardware, software, and service revenue. Total factory revenue does not include revenue that a company may receive from products sold to another company for resale (OEM revenue).

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Table 3
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Worldwide
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	48,828	57,496	74,672	84,984	101,165	120,500	144,200	170,200	197,900	226,400	20	17
Unit Shipments or Seats	51,413	60,650	77,266	86,511	102,299	121,500	144,800	170,700	198,300	226,600	19	17
CPU Installed Base	94,616	147,039	210,849	275,746	345,165	415,400	497,300	597,800	711,300	830,400	38	19
Installed Seats	109,399	164,231	229,486	294,227	362,396	430,700	510,300	608,400	719,200	835,900	35	18
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	69.5	57.3	63.2	49.5	40.3	37.2	34.8	32.9	31.6	30.8	-13	-5
Hardware-Only ASP	6.5	6.8	5.6	7.7	7.5	7.2	6.8	6.5	6.2	6.0	4	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	721	879	963	1,065	1,104	1,207	1,315	1,438	1,571	1,709	11	9
CPU Revenue	570	701	748	914	956	1,057	1,166	1,286	1,415	1,549	14	10
Terminal Revenue	43	42	38	30	17	17	13	10	8	6	-21	-18
Peripheral Revenue (Turnkey)	107	135	177	121	130	133	137	142	148	154	5	3
Software Revenue	352	466	518	580	662	750	857	975	1,102	1,235	17	13
Bundled	181	241	245	265	238	253	275	298	322	346	7	8
Unbundled	170	226	273	315	424	496	582	677	780	889	26	16
Service Revenue	212	280	292	361	413	464	522	593	659	736	18	12
Total Factory Revenue	1,285	1,625	1,773	2,006	2,179	2,421	2,694	3,006	3,332	3,680	14	11
Increase over Prior Year (%)	23	27	9	13	9	11	11	12	11	10		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 4
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Worldwide
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	9,356	14,468	17,015	22,138	24,688	27,800	31,500	35,400	39,700	44,200	27	12
Unit Shipments or Seats	9,356	14,468	17,015	22,138	24,688	27,800	31,500	35,400	39,700	44,200	27	12
CPU Installed Base	18,903	32,602	47,991	66,780	86,142	105,700	125,900	146,600	168,200	188,200	46	17
Installed Seats	18,903	32,602	47,991	66,780	86,142	105,700	125,900	146,600	168,200	188,200	46	17
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	58.8	52.4	64.0	52.2	46.6	44.0	41.8	39.9	38.4	37.2	-6	-4
Hardware-Only ASP	18.9	19.5	17.6	21.2	22.4	21.5	20.7	19.9	19.2	18.4	4	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	360	496	586	644	667	702	745	791	842	896	17	6
CPU Revenue	284	396	443	545	561	595	635	678	726	775	19	7
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	75	101	143	99	106	108	110	113	117	121	9	3
Software Revenue	195	282	296	360	394	439	491	547	606	668	19	11
Bundled	132	181	181	215	183	197	215	234	253	271	9	8
Unbundled	63	101	115	145	211	242	276	314	353	397	35	13
Service Revenue	130	192	192	263	286	317	351	390	426	467	22	10
Total Factory Revenue	684	970	1,074	1,267	1,347	1,458	1,587	1,728	1,874	2,030	18	9
Increase over Prior Year (%)	38	42	11	18	6	8	9	9	8	8		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 5
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Worldwide
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,182	1,972	923	777	714	600	500	400	300	300	-12	-16
Unit Shipments or Seats	3,766	5,127	3,518	2,304	1,847	1,500	1,200	900	700	500	-16	-23
CPU Installed Base	3,850	5,597	6,174	6,444	6,563	6,500	6,100	5,500	5,000	4,400	14	-8
Installed Seats	18,633	22,788	24,811	24,926	23,794	21,800	19,100	16,100	12,800	9,900	6	-16
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	267.4	155.3	159.8	153.8	100.9	91.2	83.4	76.4	68.8	63.6	-22	-9
Hardware-Only ASP	166.1	114.9	283.3	218.1	179.9	186.9	180.5	171.9	166.3	162.6	2	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	213	220	142	122	72	64	49	38	28	22	-24	-21
CPU Revenue	143	155	90	85	50	43	33	25	19	15	-23	-21
Terminal Revenue	43	42	38	30	17	17	13	10	8	6	-21	-18
Peripheral Revenue (Turnkey)	27	24	14	7	5	4	3	2	2	1	-34	-25
Software Revenue	88	89	50	31	22	15	11	7	5	4	-29	-31
Bundled	43	50	30	18	17	12	8	6	4	3	-21	-31
Unbundled	45	39	20	12	5	4	2	2	1	1	-42	-30
Service Revenue	73	75	40	37	27	22	17	13	9	7	-22	-23
Total Factory Revenue	375	385	231	189	121	101	77	58	42	33	-25	-23
Increase over Prior Year (%)	1	3	-40	-18	-36	-17	-24	-24	-27	-21		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (August 1994)

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Table 6
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Worldwide
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	1,559	3,008	3,971	4,900	5,800	6,800	7,900	9,100	NA	18
Unit Shipments or Seats	NA	NA	1,559	3,008	3,971	4,900	5,800	6,800	7,900	9,100	NA	18
CPU Installed Base	NA	NA	1,559	4,567	8,357	12,700	17,200	22,100	26,400	30,900	NA	30
Installed Seats	NA	NA	1,559	4,567	8,357	12,700	17,200	22,100	26,400	30,900	NA	30
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	80.9	75.7	73.2	68.3	64.6	61.3	58.7	56.5	NA	-5
Hardware-Only ASP	NA	NA	28.5	39.4	41.8	41.7	40.9	40.2	39.4	38.7	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	66	120	165	199	228	262	297	334	NA	15
CPU Revenue	NA	NA	53	114	157	190	218	251	284	320	NA	15
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	13	6	9	9	10	11	13	14	NA	10
Software Revenue	NA	NA	49	51	75	88	103	120	138	158	NA	16
Bundled	NA	NA	24	20	23	27	31	36	42	48	NA	16
Unbundled	NA	NA	24	30	52	61	72	84	97	111	NA	16
Service Revenue	NA	NA	50	50	74	90	107	127	146	169	NA	18
Total Factory Revenue	NA	NA	164	220	314	377	438	509	581	661	NA	16
Increase over Prior Year (%)	NA	NA	NA	34	43	20	16	16	14	14		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 7
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Worldwide
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	38,291	41,055	55,174	59,061	71,792	87,200	106,400	127,500	150,100	172,800	17	19
Unit Shipments or Seats	38,291	41,055	55,174	59,061	71,792	87,200	106,400	127,500	150,100	172,800	17	19
CPU Installed Base	71,862	108,840	155,125	197,955	244,103	290,600	348,100	423,700	511,800	606,800	36	20
Installed Seats	71,862	108,840	155,125	197,955	244,103	290,600	348,100	423,700	511,800	606,800	36	20
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	27.7	21.9	15.3	11.9	9.9	9.5	9.1	8.7	8.5	8.3	-23	-3
Hardware-Only ASP	3.5	3.6	2.8	2.8	2.6	2.6	2.6	2.6	2.6	2.5	-7	-1
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	148	162	169	179	199	242	293	347	404	457	8	18
CPU Revenue	143	151	161	170	189	230	279	332	387	438	7	18
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	5	11	8	9	10	12	14	15	17	18	20	12
Software Revenue	68	95	124	139	172	208	252	301	353	405	26	19
Bundled	7	9	9	11	16	18	21	23	24	25	25	10
Unbundled	62	85	114	128	156	189	231	278	328	380	26	20
Service Revenue	9	13	10	12	26	36	48	63	78	94	29	29
Total Factory Revenue	226	270	303	330	397	485	592	711	834	956	15	19
Increase over Prior Year (%)	29	20	12	9	20	22	22	20	17	15		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 8
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: North America
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	26,653	32,874	45,760	46,582	56,549	68,000	81,900	96,800	112,200	128,000	21	18
Unit Shipments or Seats	27,576	34,197	46,871	46,997	56,699	68,100	81,900	96,900	112,200	128,000	20	18
CPU Installed Base	56,549	85,978	124,777	158,937	196,349	234,200	279,000	335,200	398,700	465,500	37	19
Installed Seats	65,826	95,929	134,890	168,235	204,135	240,300	283,400	338,200	400,400	466,200	33	18
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	59.9	53.8	63.7	44.3	33.8	31.4	29.3	27.6	26.3	25.6	-13	-5
Hardware-Only ASP	5.9	6.2	4.9	6.6	6.2	5.8	5.4	5.2	5.0	4.8	1	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	286	359	396	426	442	482	532	588	645	704	11	10
CPU Revenue	233	289	306	379	393	433	483	538	593	651	14	11
Terminal Revenue	16	20	18	10	4	3	2	2	1	1	-30	-28
Peripheral Revenue (Turnkey)	38	50	72	38	46	46	47	49	51	53	5	3
Software Revenue	152	193	230	227	250	285	326	372	419	468	13	13
Bundled	52	66	66	70	55	59	62	67	71	75	1	6
Unbundled	100	127	164	157	195	226	264	305	348	393	18	15
Service Revenue	97	121	126	138	157	174	194	220	243	270	13	11
Total Factory Revenue	536	673	752	791	849	941	1,053	1,180	1,307	1,443	12	11
Increase over Prior Year (%)	6	25	12	5	7	11	12	12	11	10		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (August 1994)

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Table 9
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: North America
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	3,896	5,452	6,969	8,548	8,349	9,100	10,000	10,900	11,900	13,000	21	9
Unit Shipments or Seats	3,896	5,452	6,969	8,548	8,349	9,100	10,000	10,900	11,900	13,000	21	9
CPU Installed Base	8,921	13,937	20,113	27,086	33,124	38,800	44,200	49,500	54,800	59,300	39	12
Installed Seats	8,921	13,937	20,113	27,086	33,124	38,800	44,200	49,500	54,800	59,300	39	12
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	48.6	48.5	62.1	46.3	42.6	40.1	37.9	36.0	34.5	33.3	-3	-5
Hardware-Only ASP	19.0	18.8	15.5	18.7	19.5	18.7	17.9	17.2	16.5	15.9	1	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	127	173	205	215	200	204	209	216	224	233	12	3
CPU Revenue	100	136	148	185	165	170	176	183	191	199	13	4
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	27	37	57	30	34	34	34	33	33	34	6	-0
Software Revenue	69	101	106	117	113	122	132	142	153	165	13	8
Bundled	40	53	48	59	36	37	39	40	42	43	-3	3
Unbundled	29	48	58	59	77	85	93	101	112	123	27	10
Service Revenue	60	82	79	94	93	100	107	115	123	132	12	7
Total Factory Revenue	257	356	390	427	406	426	448	473	500	530	12	5
Increase over Prior Year (%)	22	39	10	9	-5	5	5	6	6	6		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 10
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: North America
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	451	738	247	238	178	100	100	100	100	0	-21	-100
Unit Shipments or Seats	1,375	2,061	1,358	654	329	200	200	100	100	100	-30	-21
CPU Installed Base	1,988	2,557	2,591	2,514	2,415	2,200	2,000	1,700	1,500	1,300	5	-12
Installed Seats	11,266	12,508	12,704	11,812	10,202	8,300	6,400	4,700	3,200	1,900	-2	-29
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	272.5	171.3	172.3	186.6	131.3	119.5	109.7	100.6	92.1	84.7	-17	-8
Hardware-Only ASP	159.6	109.8	281.6	173.8	126.6	120.2	114.2	108.5	103.1	97.9	-6	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	79	85	50	40	21	16	11	9	6	4	-29	-28
CPU Revenue	54	57	27	30	16	12	9	7	4	3	-27	-27
Terminal Revenue	16	20	18	10	4	3	2	2	1	1	-30	-28
Peripheral Revenue (Turnkey)	9	9	4	1	1	1	1	0	0	0	-42	-34
Software Revenue	41	36	15	9	4	3	2	1	1	0	-44	-34
Bundled	11	12	5	2	2	1	1	1	0	0	-33	-39
Unbundled	30	25	11	6	2	1	1	1	0	0	-50	-30
Service Revenue	32	32	15	12	11	8	6	4	2	2	-24	-30
Total Factory Revenue	152	153	80	61	35	26	19	14	9	6	-31	-29
Increase over Prior Year (%)	-19	1	-48	-23	-42	-27	-27	-26	-38	-26		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 11
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: North America
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	999	2,011	2,878	3,400	4,000	4,600	5,300	6,100	NA	16
Unit Shipments or Seats	NA	NA	999	2,011	2,878	3,400	4,000	4,600	5,300	6,100	NA	16
CPU Installed Base	NA	NA	999	3,010	5,767	8,800	11,900	15,100	18,000	20,900	NA	29
Installed Seats	NA	NA	999	3,010	5,767	8,800	11,900	15,100	18,000	20,900	NA	29
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	74.8	76.6	67.5	63.5	60.0	57.0	54.7	52.8	NA	-5
Hardware-Only ASP	NA	NA	25.2	35.2	37.6	36.8	36.1	35.4	34.7	34.0	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	37	72	108	123	140	159	179	200	NA	13
CPU Revenue	NA	NA	29	69	103	118	134	153	172	191	NA	13
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	8	3	5	6	6	7	7	8	NA	11
Software Revenue	NA	NA	30	24	35	40	46	53	61	68	NA	15
Bundled	NA	NA	12	7	11	13	15	18	20	23	NA	16
Unbundled	NA	NA	18	17	23	27	31	36	40	45	NA	14
Service Revenue	NA	NA	28	25	39	46	54	64	73	83	NA	17
Total Factory Revenue	NA	NA	95	122	181	209	240	276	312	351	NA	14
Increase over Prior Year (%)	NA	NA	NA	28	49	16	15	15	13	12		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 12
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: North America
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	22,305	26,684	37,545	35,785	45,144	55,300	67,800	81,200	94,800	108,800	19	19
Unit Shipments or Seats	22,305	26,684	37,545	35,785	45,144	55,300	67,800	81,200	94,800	108,800	19	19
CPU Installed Base	45,639	69,484	101,074	126,327	155,043	184,400	220,900	268,900	324,400	384,100	36	20
Installed Seats	45,639	69,484	101,074	126,327	155,043	184,400	220,900	268,900	324,400	384,100	36	20
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	72.3	17.6	15.8	6.8	8.1	7.8	7.5	7.3	7.1	7.0	-42	-3
Hardware-Only ASP	3.4	3.7	2.7	2.8	2.4	2.5	2.5	2.5	2.5	2.4	-8	-0
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	80	101	104	99	114	140	171	205	236	267	9	19
CPU Revenue	79	96	101	95	108	133	164	196	227	257	8	19
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	2	5	3	4	5	6	7	9	10	11	34	15
Software Revenue	42	56	78	77	98	120	147	175	204	234	23	19
Bundled	1	1	2	2	6	7	7	8	9	9	50	8
Unbundled	41	55	77	75	92	113	139	167	196	225	22	20
Service Revenue	5	7	5	6	15	20	27	36	45	54	32	30
Total Factory Revenue	127	163	187	182	226	280	346	416	485	555	15	20
Increase over Prior Year (%)	17	28	14	-3	25	24	23	20	17	14		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 13
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Europe
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	13,551	14,931	15,793	22,812	27,212	31,900	37,300	43,700	51,000	58,700	19	17
Unit Shipments or Seats	14,619	16,304	16,878	23,523	27,690	32,300	37,600	43,900	51,200	58,800	17	16
CPU Installed Base	26,029	39,632	52,536	70,063	89,227	108,800	131,200	157,700	187,300	218,100	36	20
Installed Seats	29,692	44,608	58,470	76,407	95,570	114,900	136,700	162,400	191,000	220,800	34	18
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	80.5	63.4	70.8	53.9	40.6	37.1	34.3	32.0	30.4	29.3	-16	-6
Hardware-Only ASP	8.8	9.1	9.0	10.7	10.7	10.4	9.9	9.4	8.9	8.6	5	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	282	325	345	394	392	426	457	492	533	578	9	8
CPU Revenue	227	268	277	342	351	385	418	456	498	544	12	9
Terminal Revenue	16	15	14	13	8	7	6	4	3	3	-17	-18
Peripheral Revenue (Turnkey)	39	42	55	38	33	33	33	32	32	32	-4	-1
Software Revenue	137	182	185	219	246	276	311	349	391	436	16	12
Bundled	90	118	117	118	92	96	101	106	110	114	1	4
Unbundled	47	64	68	101	154	180	210	244	281	322	34	16
Service Revenue	82	114	112	162	180	202	224	251	276	306	22	11
Total Factory Revenue	501	621	641	775	818	903	992	1,093	1,201	1,320	13	10
Increase over Prior Year (%)	35	24	3	21	6	10	10	10	10	10		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (August 1994)

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Table 14
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Europe
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	3,618	5,981	6,356	8,711	10,234	11,400	12,800	14,200	15,600	17,300	30	11
Unit Shipments or Seats	3,618	5,981	6,356	8,711	10,234	11,400	12,800	14,200	15,600	17,300	30	11
CPU Installed Base	7,237	12,948	18,693	26,102	34,278	42,400	50,800	59,100	67,500	75,100	48	17
Installed Seats	7,237	12,948	18,693	26,102	34,278	42,400	50,800	59,100	67,500	75,100	48	17
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	66.3	53.5	66.6	52.8	43.4	40.9	38.6	36.7	35.2	33.9	-10	-5
Hardware-Only ASP	19.7	21.1	21.5	24.2	25.1	24.1	23.1	22.2	21.3	20.5	6	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	150	203	239	262	273	287	301	315	331	348	16	5
CPU Revenue	123	172	192	230	245	259	273	288	305	323	19	6
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	27	31	46	32	28	28	27	27	26	26	1	-2
Software Revenue	90	128	130	155	172	189	209	229	249	271	18	10
Bundled	66	91	92	96	75	77	81	85	88	91	3	4
Unbundled	24	37	38	59	97	112	127	144	161	181	42	13
Service Revenue	52	82	80	124	138	152	167	182	197	213	28	9
Total Factory Revenue	292	412	449	541	583	628	676	725	777	833	19	7
Increase over Prior Year (%)	40	41	9	21	8	8	8	7	7	7		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 15
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Europe
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	582	678	273	210	130	100	100	100	100	100	-31	-5
Unit Shipments or Seats	1,650	2,051	1,358	921	607	500	400	300	200	200	-22	-20
CPU Installed Base	1,425	2,063	2,238	2,306	2,195	2,000	1,800	1,500	1,300	1,100	11	-13
Installed Seats	5,088	7,040	8,172	8,649	8,538	8,100	7,300	6,200	4,900	3,800	14	-15
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	197.3	188.7	253.1	348.8	268.0	236.8	216.4	198.4	181.7	166.8	8	-9
Hardware-Only ASP	169.5	128.3	270.2	239.8	211.9	214.5	205.3	191.8	184.5	178.2	6	-3
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	87	87	55	51	26	23	18	14	10	8	-26	-20
CPU Revenue	62	63	37	35	18	15	12	9	7	5	-27	-21
Terminal Revenue	16	15	14	13	8	7	6	4	3	3	-17	-18
Peripheral Revenue (Turnkey)	9	8	4	3	1	1	0	0	0	0	-46	-24
Software Revenue	31	32	19	12	6	4	3	2	1	1	-35	-30
Bundled	21	25	16	10	5	3	2	2	1	1	-31	-30
Unbundled	10	8	4	2	1	1	0	0	0	0	-46	-29
Service Revenue	27	29	15	16	9	7	6	5	3	3	-24	-21
Total Factory Revenue	145	148	88	79	41	34	26	20	15	12	-27	-21
Increase over Prior Year (%)	19	2	-40	-10	-49	-16	-23	-23	-26	-19		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (August 1994)

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Table 16
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Europe
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	356	817	827	1,100	1,400	1,700	2,000	2,300	NA	23
Unit Shipments or Seats	NA	NA	356	817	827	1,100	1,400	1,700	2,000	2,300	NA	23
CPU Installed Base	NA	NA	356	1,173	1,951	2,900	4,000	5,200	6,300	7,500	NA	31
Installed Seats	NA	NA	356	1,173	1,951	2,900	4,000	5,200	6,300	7,500	NA	31
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	91.3	70.6	84.7	78.0	73.7	70.0	67.2	64.9	NA	-5
Hardware-Only ASP	NA	NA	44.1	52.4	56.3	54.7	53.6	52.5	51.5	50.5	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	20	39	45	58	69	81	93	108	NA	19
CPU Revenue	NA	NA	16	37	43	56	66	79	91	106	NA	20
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	3	2	2	2	2	2	2	3	NA	4
Software Revenue	NA	NA	12	17	25	31	37	44	51	59	NA	19
Bundled	NA	NA	8	9	8	9	11	12	13	15	NA	13
Unbundled	NA	NA	4	8	17	21	26	32	38	44	NA	21
Service Revenue	NA	NA	14	18	25	32	39	47	55	64	NA	21
Total Factory Revenue	NA	NA	46	74	95	120	145	172	199	231	NA	19
Increase over Prior Year (%)	NA	NA	NA	60	28	27	20	19	16	16		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 17
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Europe
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	9,351	8,273	8,808	13,074	16,022	19,300	23,100	27,800	33,400	39,100	14	20
Unit Shipments or Seats	9,351	8,273	8,808	13,074	16,022	19,300	23,100	27,800	33,400	39,100	14	20
CPU Installed Base	17,367	24,621	31,249	40,483	50,803	61,400	74,600	91,900	112,200	134,400	31	21
Installed Seats	17,367	24,621	31,249	40,483	50,803	61,400	74,600	91,900	112,200	134,400	31	21
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	133.3	79.6	11.1	10.1	9.8	9.5	9.1	8.8	8.6	8.4	-48	-3
Hardware-Only ASP	4.3	4.0	3.5	3.0	2.8	2.8	2.8	2.8	2.8	2.8	-10	0
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	45	36	32	42	48	59	70	83	99	113	2	19
CPU Revenue	43	33	31	40	46	56	67	80	95	110	2	19
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	2	2	1	2	2	3	3	3	3	4	3	12
Software Revenue	16	22	23	35	44	52	63	75	90	105	28	19
Bundled	2	2	2	3	5	6	7	7	8	8	19	12
Unbundled	14	20	21	32	39	47	56	68	82	97	29	20
Service Revenue	3	4	3	3	8	10	13	17	21	26	27	28
Total Factory Revenue	64	61	58	80	99	121	145	175	210	244	12	20
Increase over Prior Year (%)	50	-5	-4	38	25	22	20	21	20	16		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 18
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Asia
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	6,487	7,470	8,759	9,879	9,314	10,700	12,300	14,000	16,100	18,200	9	14
Unit Shipments or Seats	6,996	7,827	9,062	10,231	9,797	11,100	12,600	14,200	16,200	18,300	9	13
CPU Installed Base	8,451	15,776	23,903	32,112	38,167	43,300	48,600	55,200	63,100	71,400	46	13
Installed Seats	9,706	17,374	25,771	34,249	40,643	46,000	51,300	57,900	65,400	73,400	43	13
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	65.0	51.9	52.0	49.5	49.2	46.1	43.8	42.0	40.7	39.8	-7	-4
Hardware-Only ASP	4.9	5.2	5.1	8.3	9.6	10.8	10.0	9.4	9.1	8.7	18	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	121	164	177	201	192	209	221	235	254	273	12	7
CPU Revenue	84	118	129	152	145	161	172	184	201	218	15	8
Terminal Revenue	10	6	5	7	6	7	5	4	3	3	-14	-13
Peripheral Revenue (Turnkey)	27	40	42	42	41	42	44	47	50	53	11	5
Software Revenue	43	69	75	100	113	124	139	158	180	202	27	12
Bundled	33	51	53	69	73	78	87	97	108	119	22	10
Unbundled	11	18	22	31	39	45	52	61	71	83	39	16
Service Revenue	22	34	39	45	47	54	61	70	80	90	22	14
Total Factory Revenue	186	267	291	346	352	387	421	463	513	566	17	10
Increase over Prior Year (%)	42	44	9	19	2	10	9	10	11	10		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 19
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Asia
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,371	2,455	2,675	3,654	3,734	4,300	5,100	6,000	7,000	8,000	28	16
Unit Shipments or Seats	1,371	2,455	2,675	3,654	3,734	4,300	5,100	6,000	7,000	8,000	28	16
CPU Installed Base	1,818	4,244	6,794	10,117	13,173	16,300	19,800	23,500	27,700	32,000	64	19
Installed Seats	1,818	4,244	6,794	10,117	13,173	16,300	19,800	23,500	27,700	32,000	64	19
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	62.7	55.7	60.6	59.2	58.6	55.1	52.1	49.5	47.5	45.9	-2	-5
Hardware-Only ASP	22.2	25.8	21.4	25.0	26.0	25.0	24.0	23.0	22.1	21.2	4	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	64	102	113	140	136	146	159	173	190	207	21	9
CPU Revenue	46	72	80	105	102	109	120	132	145	159	22	9
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	18	31	33	35	35	36	39	42	45	47	18	6
Software Revenue	23	37	43	68	76	87	101	118	136	154	35	15
Bundled	20	32	35	55	58	65	75	85	96	107	30	13
Unbundled	3	6	8	14	18	22	27	33	40	48	56	22
Service Revenue	10	20	23	33	33	39	46	54	63	72	35	17
Total Factory Revenue	97	159	180	241	245	271	306	345	388	433	26	12
Increase over Prior Year (%)	56	65	13	34	2	11	13	13	13	11		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 20
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Asia
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	119	500	388	316	397	300	300	200	200	200	35	-13
Unit Shipments or Seats	628	857	691	669	880	800	600	400	300	300	9	-19
CPU Installed Base	319	810	1,174	1,459	1,796	2,000	2,200	2,100	2,100	1,900	54	1
Installed Seats	1,574	2,408	3,043	3,596	4,272	4,700	4,900	4,800	4,400	3,900	28	-2
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	647.4	112.3	102.1	79.6	67.3	60.7	55.7	50.9	46.5	43.1	-43	-9
Hardware-Only ASP	177.7	104.0	311.8	459.3	426.3	313.2	295.3	281.7	262.5	246.3	24	-10
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	41	42	34	28	24	25	19	15	12	10	-13	-17
CPU Revenue	23	31	24	18	15	15	12	9	7	6	-10	-17
Terminal Revenue	10	6	5	7	6	7	5	4	3	3	-14	-13
Peripheral Revenue (Turnkey)	8	6	5	3	3	2	2	1	1	1	-19	-23
Software Revenue	14	17	13	9	12	8	6	4	3	2	-4	-30
Bundled	10	13	9	6	10	7	5	3	2	2	-1	-30
Unbundled	4	4	4	3	2	2	1	1	1	0	-13	-30
Service Revenue	11	12	9	7	7	6	5	4	3	2	-9	-19
Total Factory Revenue	65	72	56	44	43	39	30	23	18	14	-10	-20
Increase over Prior Year (%)	27	11	-22	-21	-3	-8	-23	-25	-22	-21		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 21
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Asia
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	120	109	137	200	200	300	300	400	NA	24
Unit Shipments or Seats	NA	NA	120	109	137	200	200	300	300	400	NA	24
CPU Installed Base	NA	NA	120	229	359	600	800	1,000	1,100	1,300	NA	29
Installed Seats	NA	NA	120	229	359	600	800	1,000	1,100	1,300	NA	29
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	87.2	107.0	74.2	70.9	67.1	63.8	61.2	59.1	NA	-4
Hardware-Only ASP	NA	NA	37.0	59.7	70.3	67.6	66.2	64.9	63.6	62.4	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	6	6	8	12	13	14	15	17	NA	16
CPU Revenue	NA	NA	5	6	7	12	12	13	14	15	NA	17
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	1	0	1	1	1	1	1	2	NA	14
Software Revenue	NA	NA	3	5	8	8	9	10	11	13	NA	11
Bundled	NA	NA	3	3	2	2	3	4	5	6	NA	22
Unbundled	NA	NA	NA	2	5	6	6	6	7	7	NA	5
Service Revenue	NA	NA	5	4	5	7	7	8	9	10	NA	14
Total Factory Revenue	NA	NA	13	15	21	27	29	33	36	40	NA	14
Increase over Prior Year (%)	NA	NA	NA	12	39	31	8	11	11	10		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 22
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Asia
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	4,998	4,514	5,577	5,800	5,046	5,800	6,600	7,500	8,500	9,600	0	14
Unit Shipments or Seats	4,998	4,514	5,577	5,800	5,046	5,800	6,600	7,500	8,500	9,600	0	14
CPU Installed Base	6,314	10,722	15,815	20,308	22,839	24,300	25,900	28,600	32,100	36,200	38	10
Installed Seats	6,314	10,722	15,815	20,308	22,839	24,300	25,900	28,600	32,100	36,200	38	10
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	13.5	19.1	16.5	15.9	13.5	13.0	12.4	12.1	11.8	11.5	0	-3
Hardware-Only ASP	2.5	1.9	2.4	3.0	3.5	3.6	3.6	3.6	3.6	3.5	9	0
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	17	20	24	27	24	27	30	33	37	40	9	11
CPU Revenue	15	16	20	24	21	24	27	30	34	37	9	12
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	1	4	3	3	2	3	3	3	3	3	17	2
Software Revenue	7	14	15	18	18	20	23	26	30	33	27	13
Bundled	3	6	6	6	4	4	5	5	5	5	9	5
Unbundled	4	8	9	12	14	16	19	21	25	28	37	16
Service Revenue	1	2	3	2	2	2	3	4	5	6	11	28
Total Factory Revenue	25	36	42	47	43	50	56	63	71	79	15	13
Increase over Prior Year (%)	32	47	15	12	-7	14	13	13	12	11		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 23
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Rest of World
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	2,137	2,220	4,360	5,711	8,090	9,900	12,700	15,600	18,700	21,500	39	22
Unit Shipments or Seats	2,222	2,322	4,454	5,759	8,112	10,000	12,700	15,600	18,700	21,500	38	22
CPU Installed Base	3,587	5,654	9,633	14,634	21,422	29,100	38,400	49,700	62,200	75,300	56	29
Installed Seats	4,174	6,321	10,354	15,337	22,048	29,600	38,900	50,000	62,400	75,500	52	28
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	80.2	64.3	70.5	48.8	35.5	32.4	30.2	28.5	27.6	27.0	-18	-5
Hardware-Only ASP	6.4	7.0	5.5	6.0	6.1	6.0	5.8	5.6	5.4	5.2	-1	-3
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	31	31	45	44	78	90	106	122	139	154	26	15
CPU Revenue	26	26	36	41	67	78	93	109	123	137	27	15
Terminal Revenue	1	2	2	1	0	0	0	0	0	0	-36	-26
Peripheral Revenue (Turnkey)	4	3	7	3	10	11	12	14	15	17	27	11
Software Revenue	19	23	29	34	54	65	80	96	113	128	30	19
Bundled	7	6	8	7	18	20	24	29	33	38	28	17
Unbundled	12	16	21	27	36	45	56	68	80	91	31	20
Service Revenue	11	11	15	16	29	35	43	52	61	70	26	19
Total Factory Revenue	61	64	88	94	160	189	228	271	312	352	27	17
Increase over Prior Year (%)	93	5	37	6	71	18	20	18	15	13		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (August 1994)

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Table 24
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Rest of World
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	470	580	1,016	1,226	2,371	2,900	3,600	4,400	5,100	5,900	50	20
Unit Shipments or Seats	470	580	1,016	1,226	2,371	2,900	3,600	4,400	5,100	5,900	50	20
CPU Installed Base	927	1,474	2,390	3,475	5,567	8,100	11,000	14,500	18,200	22,000	57	32
Installed Seats	927	1,474	2,390	3,475	5,567	8,100	11,000	14,500	18,200	22,000	57	32
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	70.7	62.1	70.8	51.4	40.7	38.2	36.1	34.3	33.0	31.8	-13	-5
Hardware-Only ASP	15.5	15.4	15.3	19.2	20.7	19.8	19.0	18.3	17.6	16.9	7	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	18	19	29	28	58	66	77	88	97	108	34	13
CPU Revenue	15	16	23	26	49	57	66	76	85	94	34	14
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	3	2	6	2	9	9	10	12	13	14	32	10
Software Revenue	13	15	16	19	33	41	49	59	68	77	28	18
Bundled	5	5	6	5	15	17	20	23	27	31	28	16
Unbundled	7	10	11	13	19	24	30	36	41	46	27	20
Service Revenue	8	8	10	12	22	26	32	38	44	50	28	18
Total Factory Revenue	39	43	55	58	113	133	158	185	209	235	31	16
Increase over Prior Year (%)	145	10	30	5	94	18	19	17	13	12		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 25
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Rest of World
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	30	56	16	12	8	0	0	0	0	0	-27	-100
Unit Shipments or Seats	115	158	110	60	31	0	0	0	0	0	-28	-100
CPU Installed Base	118	167	171	165	156	100	100	100	100	100	7	-8
Installed Seats	705	833	892	868	781	700	500	400	300	200	3	-24
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	303.1	144.1	168.0	316.2	250.0	227.6	208.9	191.5	175.4	161.3	-5	-8
Hardware-Only ASP	195.0	109.9	361.2	198.6	123.9	117.7	111.8	106.2	100.9	95.9	-11	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	6	6	4	3	1	1	1	1	0	0	-33	-26
CPU Revenue	4	4	2	2	1	1	1	0	0	0	-30	-26
Terminal Revenue	1	2	2	1	0	0	0	0	0	0	-36	-26
Peripheral Revenue (Turnkey)	1	0	0	0	0	0	0	0	0	0	-52	-24
Software Revenue	3	4	2	1	0	0	0	0	0	0	-38	-30
Bundled	1	1	0	0	0	0	0	0	0	0	-30	-30
Unbundled	2	3	2	1	0	0	0	0	0	0	-43	-31
Service Revenue	3	2	1	1	1	0	0	0	0	0	-34	-25
Total Factory Revenue	13	12	7	5	2	2	1	1	1	1	-34	-27
Increase over Prior Year (%)	9	-1	-44	-32	-51	-30	-28	-22	-25	-28		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (August 1994)

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Table 26
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Rest of World
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	85	71	130	200	200	200	300	300	NA	18
Unit Shipments or Seats	NA	NA	85	71	130	200	200	200	300	300	NA	18
CPU Installed Base	NA	NA	85	155	281	400	600	800	900	1,100	NA	31
Installed Seats	NA	NA	85	155	281	400	600	800	900	1,100	NA	31
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	77.6	79.2	65.2	61.3	57.9	55.0	52.8	51.0	NA	-5
Hardware-Only ASP	NA	NA	21.7	35.6	34.7	34.0	33.4	32.7	32.0	31.4	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	3	3	5	6	6	7	9	10	NA	16
CPU Revenue	NA	NA	3	2	4	5	5	6	7	8	NA	16
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	0	0	1	1	1	1	1	2	NA	14
Software Revenue	NA	NA	3	5	8	9	11	13	16	18	NA	19
Bundled	NA	NA	2	1	2	2	2	3	3	4	NA	20
Unbundled	NA	NA	2	4	6	7	9	10	12	14	NA	18
Service Revenue	NA	NA	3	2	4	5	6	8	9	11	NA	20
Total Factory Revenue	NA	NA	10	9	17	20	24	28	34	39	NA	18
Increase over Prior Year (%)	NA	NA	NA	-2	82	19	18	19	20	16		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

CAEC-WW-MS-9404

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Table 27
CAD/CAM/CAE/GIS History and Forecast Update

Application: GIS/Mapping
Region: Rest of World
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,637	1,584	3,244	4,402	5,580	6,900	8,900	11,000	13,300	15,200	36	22
Unit Shipments or Seats	1,637	1,584	3,244	4,402	5,580	6,900	8,900	11,000	13,300	15,200	36	22
CPU Installed Base	2,542	4,013	6,987	10,838	15,418	20,400	26,700	34,300	43,000	52,200	57	28
Installed Seats	2,542	4,013	6,987	10,838	15,418	20,400	26,700	34,300	43,000	52,200	57	28
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	64.8	26.3	24.4	8.0	8.5	8.2	7.9	7.7	7.5	7.3	-40	-3
Hardware-Only ASP	3.5	3.2	2.6	2.5	2.3	2.3	2.3	2.3	2.3	2.3	-10	-0
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	6	6	9	11	14	17	22	27	32	36	21	22
CPU Revenue	6	5	9	11	13	16	21	26	31	35	20	22
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	0	0	0	0	1	1	1	1	1	1	23	19
Software Revenue	3	3	7	10	12	15	19	24	29	33	41	22
Bundled	0	0	0	0	1	2	2	2	3	3	58	20
Unbundled	3	3	7	9	11	13	17	22	26	30	39	22
Service Revenue	1	1	1	1	2	3	4	6	7	8	43	31
Total Factory Revenue	10	10	16	22	28	35	45	57	68	77	29	23
Increase over Prior Year (%)	123	-5	72	32	29	25	30	25	20	14		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 28
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Worldwide
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	115,079	140,464	156,334	176,228	196,284	224,100	255,100	286,600	316,600	343,000	14	12
Unit Shipments or Seats	119,083	143,780	159,767	178,904	198,169	225,400	256,200	287,500	317,400	343,700	14	12
CPU Installed Base	297,127	410,542	521,982	631,601	737,638	832,400	941,400	1,078,600	1,226,100	1,365,300	26	13
Installed Seats	317,404	432,830	545,777	655,432	760,135	852,500	958,900	1,093,300	1,237,700	1,374,200	24	13
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	48.0	42.4	36.0	33.4	30.3	27.6	25.8	24.3	23.0	22.3	-11	-6
Hardware-Only ASP	5.5	4.9	4.2	4.1	4.2	4.0	4.0	4.0	3.9	3.9	-7	-1
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	1,128	1,214	1,204	1,264	1,284	1,347	1,451	1,565	1,681	1,781	3	7
CPU Revenue	920	994	1,008	1,071	1,130	1,198	1,298	1,406	1,514	1,606	5	7
Terminal Revenue	66	59	53	41	23	14	13	11	10	10	-23	-16
Peripheral Revenue (Turnkey)	142	161	143	151	131	134	140	148	157	165	-2	5
Software Revenue	460	574	670	747	794	867	961	1,061	1,164	1,260	15	10
Bundled	229	264	283	345	326	335	357	382	411	438	9	6
Unbundled	232	310	388	402	468	532	604	679	753	822	19	12
Service Revenue	265	310	299	346	361	365	389	417	454	489	8	6
Total Factory Revenue	1,853	2,097	2,173	2,356	2,440	2,579	2,801	3,043	3,300	3,530	7	8
Increase over Prior Year (%)	24	13	4	8	4	6	9	9	8	7		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (August 1994)

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Table 29
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Worldwide
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	13,426	16,860	17,311	20,954	23,322	25,000	27,700	30,800	34,500	38,500	15	11
Unit Shipments or Seats	13,426	16,860	17,311	20,954	23,322	25,000	27,700	30,800	34,500	38,500	15	11
CPU Installed Base	30,108	45,239	59,398	75,284	91,099	105,900	120,800	135,800	152,100	167,500	32	13
Installed Seats	30,108	45,239	59,398	75,284	91,099	105,900	120,800	135,800	152,100	167,500	32	13
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	52.4	41.6	43.3	42.9	41.0	39.1	37.1	35.4	34.1	33.0	-6	-4
Hardware-Only ASP	18.4	22.6	20.7	21.7	23.1	22.2	21.3	20.5	19.6	18.8	6	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	414	461	474	549	589	593	614	644	685	731	9	4
CPU Revenue	324	357	393	451	506	511	531	557	595	635	12	5
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	90	104	81	98	83	81	83	86	91	95	-2	3
Software Revenue	193	231	301	349	349	371	404	443	487	535	16	9
Bundled	148	176	203	261	221	228	243	261	281	302	10	6
Unbundled	45	56	98	88	129	144	161	181	206	233	30	13
Service Revenue	151	196	190	246	253	255	269	287	311	337	14	6
Total Factory Revenue	757	888	965	1,144	1,191	1,219	1,287	1,373	1,484	1,603	12	6
Increase over Prior Year (%)	33	17	9	18	4	2	6	7	8	8		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 30
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Worldwide
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,259	2,035	1,440	1,123	1,092	1,000	1,100	1,100	1,100	1,200	-3	2
Unit Shipments or Seats	5,262	5,350	4,873	3,800	2,976	2,300	2,200	2,000	1,900	1,900	-13	-9
CPU Installed Base	4,973	6,596	7,488	7,975	8,325	8,400	8,500	8,300	8,300	8,400	14	0
Installed Seats	25,249	28,884	31,283	31,805	30,823	28,600	25,900	23,100	20,000	17,300	5	-11
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	398.1	158.6	147.2	130.9	104.5	93.9	84.5	76.8	70.2	64.8	-28	-9
Hardware-Only ASP	152.1	171.2	307.8	330.2	220.8	188.7	183.1	178.0	177.5	178.6	10	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	267	270	210	157	101	79	74	69	65	63	-22	-9
CPU Revenue	174	186	140	107	70	57	54	50	48	46	-20	-8
Terminal Revenue	66	59	53	41	23	14	13	11	10	10	-23	-16
Peripheral Revenue (Turnkey)	27	26	18	8	8	8	8	8	8	7	-25	-2
Software Revenue	70	78	58	40	40	33	29	25	22	20	-13	-13
Bundled	54	60	39	28	33	27	24	21	19	17	-12	-12
Unbundled	16	18	19	13	8	6	5	4	3	3	-17	-19
Service Revenue	81	81	54	47	40	34	32	29	28	27	-16	-8
Total Factory Revenue	417	430	322	244	181	146	135	123	115	110	-19	-9
Increase over Prior Year (%)	-5	3	-25	-24	-26	-19	-8	-8	-7	-4		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 31
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Worldwide
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	991	723	910	900	1,000	1,200	1,300	1,500	NA	11
Unit Shipments or Seats	NA	NA	991	723	910	900	1,000	1,200	1,300	1,500	NA	11
CPU Installed Base	NA	NA	991	1,713	2,580	3,400	4,100	4,900	5,500	6,100	NA	19
Installed Seats	NA	NA	991	1,713	2,580	3,400	4,100	4,900	5,500	6,100	NA	19
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	63.5	60.7	55.3	51.8	48.7	46.1	44.2	42.7	NA	-5
Hardware-Only ASP	NA	NA	46.5	42.3	43.8	39.2	38.4	37.6	36.9	36.1	NA	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	43	29	33	29	29	31	31	32	NA	-1
CPU Revenue	NA	NA	38	26	31	26	26	28	29	30	NA	-0
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	6	3	3	3	3	2	2	2	NA	-6
Software Revenue	NA	NA	14	12	15	17	19	23	26	29	NA	14
Bundled	NA	NA	14	11	14	16	19	22	25	28	NA	14
Unbundled	NA	NA	NA	1	1	1	1	1	1	1	NA	14
Service Revenue	NA	NA	31	13	17	17	18	20	21	23	NA	5
Total Factory Revenue	NA	NA	89	54	65	63	67	73	78	84	NA	5
Increase over Prior Year (%)	NA	NA	NA	-39	20	-4	6	10	7	7		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 32
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Worldwide
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	100,395	121,569	136,593	153,428	170,961	197,100	225,400	253,500	279,700	301,800	14	12
Unit Shipments or Seats	100,395	121,569	136,593	153,428	170,961	197,100	225,400	253,500	279,700	301,800	14	12
CPU Installed Base	262,046	358,707	454,106	546,629	635,635	714,600	808,100	929,500	1,060,100	1,183,400	25	13
Installed Seats	262,046	358,707	454,106	546,629	635,635	714,600	808,100	929,500	1,060,100	1,183,400	25	13
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	17.4	18.0	10.7	11.1	11.9	11.0	10.5	10.2	9.9	9.7	-9	-4
Hardware-Only ASP	3.7	3.4	3.1	3.1	2.9	3.0	3.0	3.0	3.0	2.9	-6	0
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	447	483	476	528	561	646	734	821	899	955	6	11
CPU Revenue	422	451	437	487	524	603	687	769	843	895	6	11
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	25	31	39	41	37	42	47	51	56	60	11	10
Software Revenue	198	265	297	346	390	446	509	571	629	676	19	12
Bundled	27	28	26	46	59	64	71	78	86	91	22	9
Unbundled	171	236	271	301	331	382	438	493	543	585	18	12
Service Revenue	34	32	23	39	51	59	70	81	93	103	11	15
Total Factory Revenue	678	779	796	914	1,002	1,151	1,313	1,472	1,622	1,734	10	12
Increase over Prior Year (%)	39	15	2	15	10	15	14	12	10	7		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 33
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: North America
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	51,208	59,496	67,522	71,098	81,955	92,100	103,200	114,700	126,600	138,200	12	11
Unit Shipments or Seats	52,572	61,106	69,063	72,115	82,563	92,500	103,500	115,100	126,900	138,600	12	11
CPU Installed Base	155,922	198,386	240,266	276,177	314,213	346,400	385,900	437,700	493,900	548,400	19	12
Installed Seats	167,077	210,041	251,937	287,049	323,772	354,400	392,400	442,800	497,700	551,100	18	11
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	70.4	54.9	49.2	37.7	30.4	26.8	24.6	23.1	22.0	21.2	-19	-7
Hardware-Only ASP	5.1	4.8	4.1	3.6	3.7	3.7	3.7	3.6	3.6	3.6	-8	-1
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	411	424	424	384	413	434	467	506	547	584	0	7
CPU Revenue	342	346	355	324	372	394	426	463	502	538	2	8
Terminal Revenue	24	28	25	15	6	5	4	3	3	3	-29	-14
Peripheral Revenue (Turnkey)	45	51	44	45	35	35	37	39	42	44	-6	4
Software Revenue	157	191	222	226	250	271	300	332	366	399	12	10
Bundled	57	62	68	72	57	56	60	65	71	74	-0	5
Unbundled	99	129	154	154	193	215	240	266	295	325	18	11
Service Revenue	111	118	110	108	116	114	121	131	143	155	1	6
Total Factory Revenue	679	733	756	717	779	819	889	968	1,056	1,138	3	8
Increase over Prior Year (%)	8	8	3	-5	9	5	8	9	9	8		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (August 1994)

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Table 34
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: North America
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	4,425	5,228	5,309	6,225	8,180	8,500	9,400	10,500	11,800	13,300	17	10
Unit Shipments or Seats	4,425	5,228	5,309	6,225	8,180	8,500	9,400	10,500	11,800	13,300	17	10
CPU Installed Base	12,460	16,685	20,541	24,589	29,988	34,900	40,000	45,400	51,200	56,800	25	14
Installed Seats	12,460	16,685	20,541	24,589	29,988	34,900	40,000	45,400	51,200	56,800	25	14
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	57.2	44.8	43.3	37.8	32.9	31.0	29.3	27.8	26.7	25.7	-13	-5
Hardware-Only ASP	18.0	22.1	18.2	16.9	19.6	18.8	18.1	17.4	16.7	16.0	2	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	150	153	145	143	176	171	178	188	202	216	4	4
CPU Revenue	117	120	125	116	158	155	162	172	186	200	8	5
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	33	32	20	27	18	16	16	16	16	16	-14	-2
Software Revenue	57	68	87	87	94	97	105	115	128	141	13	8
Bundled	43	47	54	61	42	40	42	44	47	50	-0	3
Unbundled	14	21	33	26	52	57	63	71	81	91	38	12
Service Revenue	67	81	74	89	91	89	94	101	109	118	8	5
Total Factory Revenue	274	303	306	319	361	358	377	404	439	475	7	6
Increase over Prior Year (%)	14	11	1	4	13	-1	6	7	9	8		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 35
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: North America
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	527	492	249	141	147	100	100	100	100	100	-27	-7
Unit Shipments or Seats	1,891	2,102	1,789	1,159	755	600	500	500	400	400	-21	-12
CPU Installed Base	2,361	2,546	2,467	2,286	2,104	1,900	1,600	1,400	1,300	1,100	-3	-12
Installed Seats	13,516	14,201	14,138	13,159	11,664	9,900	8,200	6,600	5,100	3,900	-4	-20
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	330.3	255.5	256.1	351.6	282.0	256.7	235.7	216.0	197.8	182.0	-4	-8
Hardware-Only ASP	148.2	189.9	313.3	289.0	143.7	136.5	129.6	123.2	117.0	111.2	-1	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	95	93	64	40	25	20	17	15	13	12	-28	-13
CPU Revenue	62	57	34	24	18	15	12	11	10	9	-26	-13
Terminal Revenue	24	28	25	15	6	5	4	3	3	3	-29	-14
Peripheral Revenue (Turnkey)	9	8	5	1	1	1	1	1	1	1	-44	-8
Software Revenue	21	21	13	11	7	5	4	3	3	2	-24	-19
Bundled	14	14	7	5	4	3	2	2	2	2	-25	-16
Unbundled	7	7	6	7	3	2	2	1	1	1	-23	-26
Service Revenue	32	29	17	13	10	7	6	6	5	5	-26	-13
Total Factory Revenue	148	143	94	64	42	32	27	24	21	19	-27	-14
Increase over Prior Year (%)	-8	-3	-35	-31	-36	-23	-16	-12	-11	-8		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (August 1994)

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Table 36
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: North America
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	503	277	446	500	600	800	900	1,000	NA	18
Unit Shipments or Seats	NA	NA	503	277	446	500	600	800	900	1,000	NA	18
CPU Installed Base	NA	NA	503	780	1,209	1,700	2,200	2,700	3,200	3,700	NA	25
Installed Seats	NA	NA	503	780	1,209	1,700	2,200	2,700	3,200	3,700	NA	25
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	58.4	60.4	48.8	45.8	43.3	41.2	39.5	38.1	NA	-5
Hardware-Only ASP	NA	NA	48.8	36.6	39.9	39.1	38.4	37.6	36.8	36.1	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	21	11	15	16	17	20	21	23	NA	9
CPU Revenue	NA	NA	19	10	13	15	15	19	20	22	NA	10
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	3	1	1	1	1	1	1	1	NA	-4
Software Revenue	NA	NA	7	3	6	7	9	11	12	14	NA	18
Bundled	NA	NA	7	3	6	7	9	11	12	14	NA	18
Unbundled	NA	NA	NA	0	0	0	0	0	0	0	NA	50
Service Revenue	NA	NA	17	3	7	8	9	10	11	12	NA	11
Total Factory Revenue	NA	NA	45	18	27	31	34	40	44	48	NA	12
Increase over Prior Year (%)	NA	NA	NA	-61	55	11	12	18	10	9		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 37
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: North America
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	46,256	53,776	61,461	64,454	73,183	82,900	93,000	103,400	113,700	123,900	12	11
Unit Shipments or Seats	46,256	53,776	61,461	64,454	73,183	82,900	93,000	103,400	113,700	123,900	12	11
CPU Installed Base	141,101	179,154	216,755	248,522	280,911	307,900	342,000	388,100	438,200	486,800	19	12
Installed Seats	141,101	179,154	216,755	248,522	280,911	307,900	342,000	388,100	438,200	486,800	19	12
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	22.8	21.8	13.9	7.0	8.4	8.1	7.8	7.5	7.3	7.2	-22	-3
Hardware-Only ASP	3.6	3.3	3.1	2.9	2.7	2.7	2.7	2.7	2.7	2.7	-7	-0
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	166	179	194	189	198	227	255	283	310	333	4	11
CPU Revenue	163	168	178	174	183	209	236	261	286	307	3	11
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	3	10	16	16	15	17	20	22	24	26	48	11
Software Revenue	79	101	115	124	143	162	182	202	223	242	16	11
Bundled	1	1	1	3	5	6	7	8	9	9	48	14
Unbundled	78	100	115	121	138	156	175	194	214	233	15	11
Service Revenue	12	8	3	3	8	10	13	15	18	21	-10	21
Total Factory Revenue	258	288	312	316	349	399	450	501	551	596	8	11
Increase over Prior Year (%)	11	12	8	1	10	14	13	11	10	8		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 38
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Europe
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	42,215	52,877	55,069	68,780	75,279	85,900	97,800	108,900	118,700	125,200	16	11
Unit Shipments or Seats	43,578	53,904	56,196	69,573	75,845	86,200	97,900	109,000	118,800	125,300	15	11
CPU Installed Base	102,438	147,666	188,181	233,985	276,838	315,800	359,300	412,000	466,400	513,500	28	13
Installed Seats	107,801	153,952	195,361	241,484	284,141	322,300	364,800	416,400	469,700	515,800	27	13
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	55.8	45.4	41.3	34.0	26.4	23.1	21.6	20.4	19.4	18.9	-17	-6
Hardware-Only ASP	6.1	5.3	4.8	4.5	4.4	4.1	4.0	4.0	4.0	4.0	-8	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	418	450	453	490	464	472	505	539	571	593	3	5
CPU Revenue	345	384	390	424	420	434	468	502	534	556	5	6
Terminal Revenue	23	19	18	15	10	3	2	2	1	1	-19	-36
Peripheral Revenue (Turnkey)	51	46	46	51	35	35	35	35	36	37	-9	1
Software Revenue	185	228	277	331	313	339	373	407	440	467	14	8
Bundled	86	98	115	159	127	128	134	141	149	156	10	4
Unbundled	99	130	163	173	186	211	239	266	292	311	17	11
Service Revenue	98	120	116	140	129	126	133	140	151	161	7	5
Total Factory Revenue	702	798	847	961	906	937	1,011	1,086	1,162	1,222	7	6
Increase over Prior Year (%)	30	14	6	13	-6	3	8	7	7	5		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 39
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Europe
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	5,996	6,770	7,429	9,146	9,335	9,900	10,700	11,700	12,800	14,200	12	9
Unit Shipments or Seats	5,996	6,770	7,429	9,146	9,335	9,900	10,700	11,700	12,800	14,200	12	9
CPU Installed Base	12,865	19,074	25,212	32,304	38,416	44,000	49,200	54,300	59,600	64,300	31	11
Installed Seats	12,865	19,074	25,212	32,304	38,416	44,000	49,200	54,300	59,600	64,300	31	11
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	49.8	39.9	42.6	43.6	34.7	32.5	30.7	29.1	27.9	26.9	-9	-5
Hardware-Only ASP	17.9	20.6	22.7	24.1	26.0	25.0	24.0	23.0	22.1	21.2	10	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	163	168	194	226	208	205	209	215	226	239	6	3
CPU Revenue	131	138	168	193	187	187	191	198	208	221	9	3
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	33	30	26	33	20	19	18	18	17	18	-11	-3
Software Revenue	87	99	145	177	143	148	158	169	182	197	13	7
Bundled	60	68	88	129	88	88	91	96	100	106	10	4
Unbundled	27	30	57	48	55	60	67	73	81	90	19	10
Service Revenue	61	78	77	110	97	96	99	104	110	118	12	4
Total Factory Revenue	311	345	416	513	447	449	466	488	518	554	9	4
Increase over Prior Year (%)	37	11	21	23	-13	0	4	5	6	7		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 40
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Europe
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	478	427	216	134	98	0	0	0	0	0	-33	-100
Unit Shipments or Seats	1,840	1,453	1,343	927	664	300	200	200	100	100	-23	-32
CPU Installed Base	1,550	1,927	2,034	1,988	1,845	1,600	1,300	1,100	900	700	4	-18
Installed Seats	6,913	8,214	9,214	9,487	9,148	8,100	6,900	5,500	4,200	3,000	7	-20
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	338.5	312.9	382.1	377.7	380.9	349.0	320.6	293.3	268.3	244.8	3	-8
Hardware-Only ASP	155.3	161.2	283.7	302.4	262.9	258.9	245.8	238.8	233.3	216.6	14	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	93	82	63	41	26	10	8	6	4	3	-27	-34
CPU Revenue	62	56	41	25	16	7	5	4	3	2	-29	-33
Terminal Revenue	23	19	18	15	10	3	2	2	1	1	-19	-36
Peripheral Revenue (Turnkey)	8	7	4	1	1	0	0	0	0	0	-46	-25
Software Revenue	22	22	17	6	5	3	2	1	1	1	-32	-32
Bundled	18	18	12	3	3	2	1	1	1	1	-33	-32
Unbundled	4	4	5	2	1	1	0	0	0	0	-26	-32
Service Revenue	27	28	18	9	7	3	3	2	1	1	-29	-30
Total Factory Revenue	142	132	98	55	38	16	12	9	7	5	-28	-33
Increase over Prior Year (%)	5	-7	-26	-44	-32	-57	-24	-26	-28	-21		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (August 1994)

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Table 41
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Europe
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	290	380	365	300	300	300	300	400	NA	2
Unit Shipments or Seats	NA	NA	290	380	365	300	300	300	300	400	NA	2
CPU Installed Base	NA	NA	290	669	1,011	1,200	1,400	1,600	1,600	1,600	NA	10
Installed Seats	NA	NA	290	669	1,011	1,200	1,400	1,600	1,600	1,600	NA	10
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	74.2	56.4	55.4	51.5	48.6	46.2	44.3	42.8	NA	-5
Hardware-Only ASP	NA	NA	55.3	54.4	51.4	.0	.0	.0	.0	.0	NA	-100
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	15	15	14	9	8	7	6	6	NA	-16
CPU Revenue	NA	NA	13	14	13	8	7	6	6	5	NA	-17
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	2	1	1	1	1	1	1	1	NA	-10
Software Revenue	NA	NA	5	6	6	6	7	8	9	9	NA	9
Bundled	NA	NA	5	6	6	6	7	8	9	9	NA	9
Unbundled	NA	NA	NA	NA	0	0	0	0	0	0	NA	NA
Service Revenue	NA	NA	10	7	6	5	5	5	5	5	NA	-3
Total Factory Revenue	NA	NA	30	28	26	20	20	20	20	20	NA	-5
Increase over Prior Year (%)	NA	NA	NA	-5	-7	-23	-2	-0	2	2		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 42
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Europe
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	35,742	45,681	47,134	59,120	65,482	75,700	86,700	96,900	105,600	110,700	16	11
Unit Shipments or Seats	35,742	45,681	47,134	59,120	65,482	75,700	86,700	96,900	105,600	110,700	16	11
CPU Installed Base	88,023	126,665	160,645	199,023	235,566	268,900	307,300	355,000	404,300	446,800	28	14
Installed Seats	88,023	126,665	160,645	199,023	235,566	268,900	307,300	355,000	404,300	446,800	28	14
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	25.1	26.1	14.9	12.5	13.2	11.7	11.2	10.9	10.6	10.3	-15	-5
Hardware-Only ASP	4.1	3.9	3.5	3.2	2.9	3.0	3.0	3.0	2.9	2.9	-8	0
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	162	199	181	208	217	248	281	310	335	346	8	10
CPU Revenue	152	190	168	192	204	234	265	294	318	327	8	10
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	10	9	14	16	13	15	15	17	18	18	6	8
Software Revenue	76	107	111	142	160	182	206	229	249	261	20	10
Bundled	9	12	10	20	30	32	34	37	39	40	36	6
Unbundled	67	96	101	122	130	150	172	193	210	221	18	11
Service Revenue	11	14	11	14	19	22	26	29	34	36	15	14
Total Factory Revenue	249	321	303	364	396	452	513	569	618	642	12	10
Increase over Prior Year (%)	39	29	-5	20	9	14	14	11	9	4		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 43
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Asia
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	19,563	25,507	30,235	31,778	32,921	38,500	44,700	51,100	57,200	62,600	14	14
Unit Shipments or Seats	20,727	26,065	30,876	32,592	33,598	39,100	45,300	51,600	57,500	62,900	13	13
CPU Installed Base	33,467	57,201	83,578	108,046	128,648	147,100	166,800	191,500	219,100	246,400	40	14
Installed Seats	36,555	60,798	87,710	112,728	133,582	152,100	171,700	196,300	223,400	250,100	38	13
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	34.9	35.4	27.2	30.7	34.0	32.4	30.2	28.3	26.6	25.4	-1	-6
Hardware-Only ASP	4.6	3.6	2.6	4.7	5.5	5.3	5.3	5.2	5.3	5.2	5	-1
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	273	319	299	362	383	414	447	482	519	552	9	8
CPU Revenue	213	248	241	300	317	346	375	406	438	465	10	8
Terminal Revenue	18	9	7	11	7	6	6	6	6	6	-21	-4
Peripheral Revenue (Turnkey)	43	62	51	51	59	62	66	70	75	81	9	6
Software Revenue	109	147	157	173	216	239	265	294	325	354	18	10
Bundled	80	102	95	108	138	147	158	171	186	201	15	8
Unbundled	30	45	62	65	77	91	107	124	139	153	27	15
Service Revenue	47	65	64	90	112	120	129	139	152	164	24	8
Total Factory Revenue	430	531	520	626	711	773	842	915	996	1,070	13	9
Increase over Prior Year (%)	47	24	-2	20	14	9	9	9	9	7		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 44
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Asia
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	2,705	4,649	4,208	5,031	5,533	6,300	7,200	8,200	9,300	10,500	20	14
Unit Shipments or Seats	2,705	4,649	4,208	5,031	5,533	6,300	7,200	8,200	9,300	10,500	20	14
CPU Installed Base	3,964	8,497	12,397	16,716	20,927	25,200	29,600	34,100	39,100	44,100	52	16
Installed Seats	3,964	8,497	12,397	16,716	20,927	25,200	29,600	34,100	39,100	44,100	52	16
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	50.0	40.9	43.9	47.6	57.3	53.9	50.9	48.3	46.3	44.7	3	-5
Hardware-Only ASP	28.3	50.3	20.0	27.6	27.3	25.7	24.6	23.6	22.5	21.6	-1	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	89	133	124	167	199	210	221	233	250	267	22	6
CPU Revenue	67	93	91	131	156	164	172	182	194	207	23	6
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	22	40	33	36	44	46	49	52	56	60	18	7
Software Revenue	45	62	64	76	109	122	137	154	173	192	25	12
Bundled	42	58	58	65	88	97	107	118	129	141	21	10
Unbundled	3	3	6	11	21	25	30	36	43	50	65	19
Service Revenue	18	33	33	40	61	66	72	78	86	94	37	9
Total Factory Revenue	152	228	220	283	370	399	430	466	509	553	25	8
Increase over Prior Year (%)	73	51	-3	28	31	8	8	8	9	9		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 45
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Asia
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	224	1,077	960	841	842	900	900	900	1,000	1,000	39	4
Unit Shipments or Seats	1,387	1,635	1,601	1,655	1,519	1,500	1,400	1,400	1,400	1,300	2	-3
CPU Installed Base	944	1,975	2,839	3,560	4,247	4,800	5,400	5,700	6,100	6,500	46	9
Installed Seats	4,032	5,573	6,971	8,242	9,181	9,900	10,300	10,500	10,400	10,200	23	2
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	560.7	106.9	97.8	98.5	79.1	77.0	71.2	65.8	60.8	56.5	-39	-7
Hardware-Only ASP	147.8	137.5	333.7	603.5	473.7	527.0	500.5	475.2	451.8	429.2	34	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	72	90	78	74	48	48	49	48	48	48	-9	-0
CPU Revenue	46	70	62	56	35	35	36	35	35	35	-7	0
Terminal Revenue	18	9	7	11	7	6	6	6	6	6	-21	-4
Peripheral Revenue (Turnkey)	9	10	9	6	7	7	7	7	7	7	-6	-0
Software Revenue	25	33	26	23	28	25	23	20	18	17	3	-10
Bundled	21	28	20	20	25	22	20	18	16	15	3	-9
Unbundled	4	5	6	3	4	3	3	2	2	2	-1	-13
Service Revenue	19	22	19	24	23	23	23	22	21	21	5	-2
Total Factory Revenue	117	145	123	121	100	97	94	90	87	85	-4	-3
Increase over Prior Year (%)	-12	24	-15	-2	-17	-4	-3	-5	-3	-2		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (August 1994)

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Table 46
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Asia
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	151	54	80	100	100	100	100	100	NA	5
Unit Shipments or Seats	NA	NA	151	54	80	100	100	100	100	100	NA	5
CPU Installed Base	NA	NA	151	205	281	400	400	500	500	500	NA	12
Installed Seats	NA	NA	151	205	281	400	400	500	500	500	NA	12
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	62.6	97.6	90.5	85.0	80.3	76.5	73.2	70.7	NA	-5
Hardware-Only ASP	NA	NA	26.6	37.8	41.5	40.0	39.1	38.0	37.2	37.1	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	5	3	4	4	4	4	4	3	NA	-5
CPU Revenue	NA	NA	5	3	4	4	3	3	3	3	NA	-6
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	1	0	1	1	0	0	0	0	NA	-4
Software Revenue	NA	NA	2	2	2	3	3	3	4	4	NA	14
Bundled	NA	NA	2	1	2	2	2	3	3	3	NA	15
Unbundled	NA	NA	NA	0	1	1	1	1	1	1	NA	11
Service Revenue	NA	NA	3	3	4	4	4	4	5	5	NA	5
Total Factory Revenue	NA	NA	10	8	10	11	11	12	12	12	NA	4
Increase over Prior Year (%)	NA	NA	NA	-25	35	5	3	4	3	3		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 47
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Asia
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	16,634	19,781	24,916	25,852	26,467	31,200	36,500	41,900	46,700	50,900	12	14
Unit Shipments or Seats	16,634	19,781	24,916	25,852	26,467	31,200	36,500	41,900	46,700	50,900	12	14
CPU Installed Base	28,559	46,728	68,191	87,564	103,193	116,700	131,400	151,100	173,400	195,300	38	14
Installed Seats	28,559	46,728	68,191	87,564	103,193	116,700	131,400	151,100	173,400	195,300	38	14
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	15.9	15.5	9.4	10.8	11.6	11.2	10.7	10.4	10.1	9.9	-8	-3
Hardware-Only ASP	3.1	2.5	2.0	3.5	4.0	4.1	4.1	4.1	4.0	4.0	7	0
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	112	97	92	119	131	152	174	197	218	234	4	12
CPU Revenue	100	85	83	110	123	143	164	186	205	220	5	12
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	12	11	9	9	8	9	10	11	12	14	-8	10
Software Revenue	39	52	65	73	75	88	102	117	130	141	18	13
Bundled	17	16	15	23	24	26	29	33	38	41	9	12
Unbundled	23	36	50	50	52	62	73	84	93	100	23	14
Service Revenue	10	10	9	23	24	27	31	35	40	44	23	13
Total Factory Revenue	162	158	166	214	230	266	307	349	388	419	9	13
Increase over Prior Year (%)	122	-2	5	29	8	16	15	14	11	8		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 48
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Rest of World
Platform: All Platforms

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	2,093	2,584	3,508	4,571	6,129	7,600	9,500	11,800	14,200	17,000	31	23
Unit Shipments or Seats	2,206	2,704	3,632	4,624	6,162	7,600	9,500	11,800	14,200	17,000	29	23
CPU Installed Base	5,300	7,289	9,958	13,393	17,939	23,100	29,500	37,500	46,700	57,000	36	26
Installed Seats	5,971	8,039	10,770	14,171	18,640	23,700	29,900	37,900	46,900	57,200	33	25
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	68.0	52.9	53.1	37.8	32.9	29.5	27.2	25.4	24.3	23.5	-17	-7
Hardware-Only ASP	6.0	5.5	4.6	4.0	2.9	2.8	2.8	2.8	2.7	2.7	-17	-1
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	25	20	27	27	23	27	32	38	45	52	-2	17
CPU Revenue	20	16	22	23	21	24	29	35	41	48	2	18
Terminal Revenue	2	2	2	1	0	0	0	0	0	0	-33	-37
Peripheral Revenue (Turnkey)	4	2	3	3	2	2	3	3	4	4	-14	16
Software Revenue	9	9	14	17	15	18	22	28	33	39	14	21
Bundled	5	3	5	6	3	4	4	5	6	6	-10	14
Unbundled	4	6	9	11	12	15	18	23	27	33	31	22
Service Revenue	8	6	8	8	5	5	6	7	8	9	-13	13
Total Factory Revenue	43	35	49	52	43	50	60	73	85	100	0	18
Increase over Prior Year (%)	35	-19	43	6	-17	16	19	21	17	17		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

CAEC-WW-MS-9404

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Table 49
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Rest of World
Platform: Technical Workstation

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	300	213	365	551	275	300	300	400	500	500	-2	13
Unit Shipments or Seats	300	213	365	551	275	300	300	400	500	500	-2	13
CPU Installed Base	820	982	1,248	1,675	1,767	1,900	1,900	2,000	2,200	2,300	21	5
Installed Seats	820	982	1,248	1,675	1,767	1,900	1,900	2,000	2,200	2,300	21	5
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	57.7	45.0	47.8	38.5	32.9	30.9	29.2	27.8	26.6	25.7	-13	-5
Hardware-Only ASP	13.3	19.3	18.6	18.8	22.3	21.4	20.5	19.7	18.9	18.1	14	-4
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	12	6	11	13	6	6	6	7	8	8	-15	7
CPU Revenue	9	5	10	11	5	5	6	6	7	7	-13	7
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	3	2	2	2	1	1	1	1	1	1	-26	7
Software Revenue	4	3	6	8	3	4	4	5	5	6	-6	12
Bundled	4	2	3	5	3	3	3	4	4	5	-10	14
Unbundled	0	1	3	3	1	1	1	1	1	1	17	9
Service Revenue	6	4	6	7	4	4	4	5	5	6	-10	10
Total Factory Revenue	21	13	23	28	13	14	15	16	18	20	-12	10
Increase over Prior Year (%)	45	-40	78	24	-54	5	8	11	12	12		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 50
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Rest of World
Platform: Host-Dependent

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	31	39	15	7	6	0	0	0	0	0	-34	-100
Unit Shipments or Seats	144	160	139	60	39	0	0	0	0	0	-28	-100
CPU Installed Base	117	147	148	140	128	100	100	100	100	0	2	-100
Installed Seats	788	896	961	917	829	700	600	500	300	200	1	-25
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	348.9	210.9	218.1	387.8	341.8	311.2	285.7	261.9	239.8	220.6	-1	-8
Hardware-Only ASP	200.2	150.4	396.6	314.5	193.6	183.9	174.7	165.9	157.7	149.8	-1	-5
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	7	6	4	2	1	1	1	1	0	0	-34	-33
CPU Revenue	4	3	2	1	1	1	0	0	0	0	-33	-31
Terminal Revenue	2	2	2	1	0	0	0	0	0	0	-33	-37
Peripheral Revenue (Turnkey)	1	0	0	0	0	0	0	0	0	0	-50	-28
Software Revenue	2	2	1	1	0	0	0	0	0	0	-40	-31
Bundled	1	1	0	0	0	0	0	0	0	0	-32	-30
Unbundled	1	1	1	0	0	0	0	0	0	0	-61	-100
Service Revenue	2	2	1	1	0	0	0	0	0	0	-37	-29
Total Factory Revenue	11	9	7	3	2	1	1	1	0	0	-35	-32
Increase over Prior Year (%)	-2	-19	-26	-53	-38	-34	-15	-10	-59	-28		

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.
Source: Dataquest (August 1994)

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Table 51
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Rest of World
Platform: Server

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	NA	NA	47	12	20	0	0	0	0	0	NA	-100
Unit Shipments or Seats	NA	NA	47	12	20	0	0	0	0	0	NA	-100
CPU Installed Base	NA	NA	47	59	78	100	100	100	200	200	NA	21
Installed Seats	NA	NA	47	59	78	100	100	100	200	200	NA	21
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	NA	NA	60.3	64.0	51.8	48.7	46.1	43.8	42.0	40.5	NA	-5
Hardware-Only ASP	NA	NA	39.6	42.4	41.3	40.5	39.7	38.9	38.1	37.3	NA	-2
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	NA	NA	2	1	1	1	1	1	1	1	NA	-0
CPU Revenue	NA	NA	2	0	1	0	0	0	1	1	NA	-1
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	NA	NA	0	0	0	0	0	0	0	0	NA	5
Software Revenue	NA	NA	1	0	0	0	1	1	1	1	NA	30
Bundled	NA	NA	1	0	0	0	1	1	1	1	NA	30
Unbundled	NA	NA	NA	NA	0	0	0	0	0	0	NA	NA
Service Revenue	NA	NA	2	0	0	0	1	1	1	1	NA	17
Total Factory Revenue	NA	NA	4	1	1	1	2	2	2	3	NA	14
Increase over Prior Year (%)	NA	NA	NA	-79	53	-2	18	18	20	20		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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Table 52
CAD/CAM/CAE/GIS History and Forecast Update

Application: AEC
Region: Rest of World
Platform: Personal Computer

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	CAGR (%) 1989-1993	CAGR (%) 1993-1998
HARDWARE SHIPMENT DATA												
CPU Shipments	1,762	2,331	3,082	4,002	5,829	7,300	9,100	11,400	13,700	16,400	35	23
Unit Shipments or Seats	1,762	2,331	3,082	4,002	5,829	7,300	9,100	11,400	13,700	16,400	35	23
CPU Installed Base	4,363	6,160	8,515	11,520	15,965	21,100	27,300	35,200	44,300	54,400	38	28
Installed Seats	4,363	6,160	8,515	11,520	15,965	21,100	27,300	35,200	44,300	54,400	38	28
CALCULATED AVERAGE SELLING PRICE DATA (Thousands of U.S. Dollars)												
Turnkey ASP	20.5	13.4	21.4	7.3	9.8	9.4	9.1	8.8	8.6	8.4	-17	-3
Hardware-Only ASP	3.7	3.4	3.1	3.0	2.6	2.6	2.6	2.6	2.6	2.6	-9	-0
REVENUE DATA (Millions of U.S. Dollars)												
Hardware Revenue	7	8	10	12	15	19	24	30	36	43	23	23
CPU Revenue	7	8	9	11	14	18	23	28	34	40	21	23
Terminal Revenue	0	0	0	0	0	0	0	0	0	0	NA	NA
Peripheral Revenue (Turnkey)	0	0	1	1	1	1	2	2	2	3	79	23
Software Revenue	3	4	6	8	11	14	18	22	27	32	40	23
Bundled	0	0	0	0	0	0	0	0	0	0	6	19
Unbundled	3	4	6	8	11	14	18	22	26	32	41	23
Service Revenue	0	0	0	0	0	1	1	1	2	2	0	39
Total Factory Revenue	10	13	16	20	27	34	43	54	64	76	28	23
Increase over Prior Year (%)	90	25	24	28	35	26	26	25	20	19		

NA = Not applicable

Note: In 1991, server was added as a platform. This reclassification reduced 1991 growth rates for the other platforms.

Source: Dataquest (August 1994)

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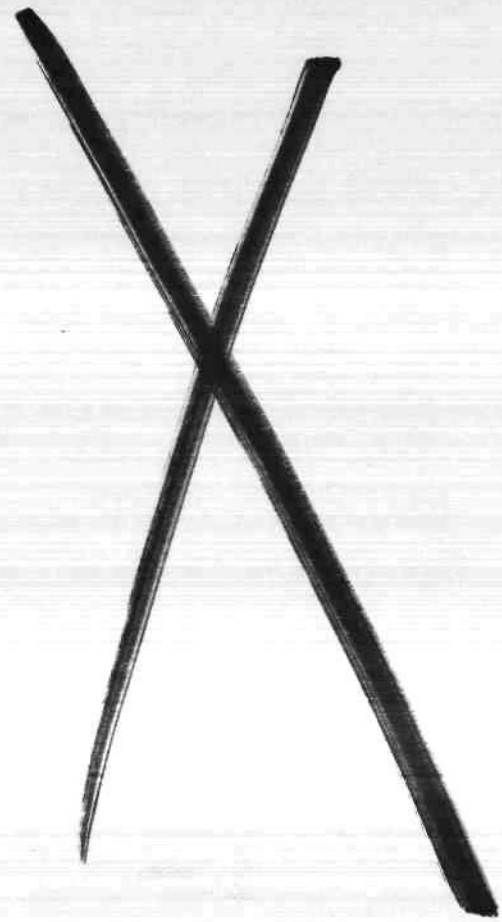

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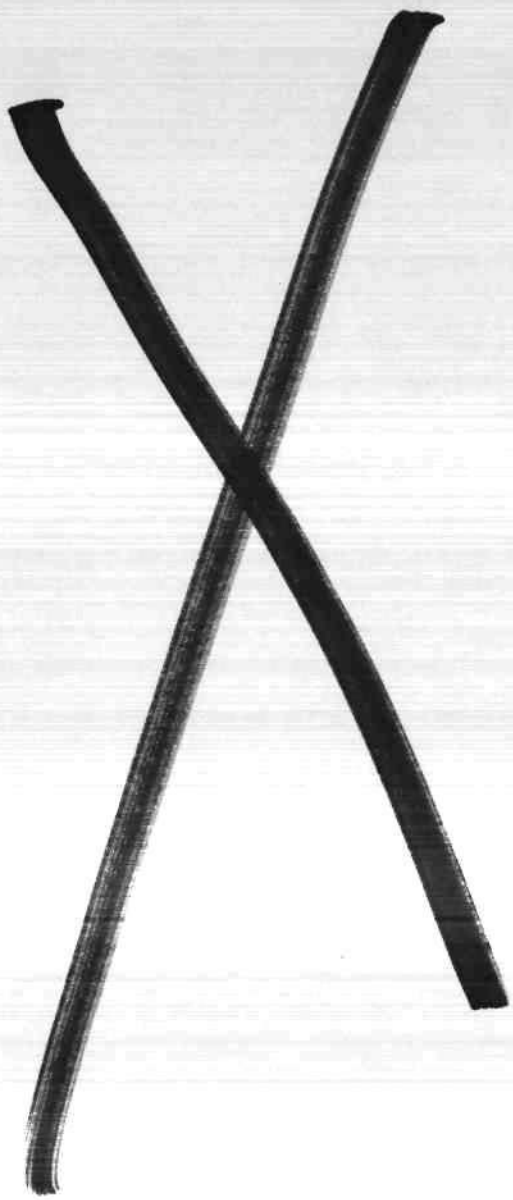

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