

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 10-K

(Mark one)

- ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 1998

OR

- TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission file number 333-55719

ECHELON CORPORATION

(Exact name of registrant as specified in its charter)

Delaware **77-0203595**
(State of Incorporation) (I.R.S. Employee Identification Number)

4015 Miranda Avenue, Palo Alto, California 94304

(Address of principal executive offices)

Registrant's telephone number **(650) 855-7400**

Securities registered pursuant to Section 12(b) of the Act: None

Securities registered pursuant to Section 12(g) of the Act:

Title of each class	Name of each exchange which registered
Common Stock \$.01 par value	Nasdaq National Market

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to filing requirements for the past 90 days. YES NO

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained to the best of Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. (X)

The aggregate market value of common stock held by non-affiliates of the registrant as of February 28, 1999 was \$116,421,183 (based on the closing sales price of \$6.813 per share as reported for the Nasdaq Market System of the National Association of Securities Dealers Automated Quotation System on February 26, 1999). Shares of common stock held by each officer, director, and holder of 5% or more of the outstanding common stock has been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of February 28, 1999, 32,677,851 shares of the registrant's Common Stock were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

- (1) Portions of the Registrant's Proxy Statement related to the 1999 Annual Meeting of Stockholders, to be held on May 11, 1999, are incorporated by reference into Part III of this Annual Report on Form 10-K where indicated.
- (2) The table of exhibits filed appears on page 27.

PART I

Certain statements contained in this Annual Report include a number of forward-looking statements which reflect the Company's current views with respect to future events and financial performance. These forward-looking statements are subject to certain risks and uncertainties, including those discussed in the "Factors That May Affect Future Results of Operations" and elsewhere in this Form 10-K that could cause actual results to differ materially from historical results or those anticipated. In this report, the words "anticipates", "believes", "expects", "future", "intends", and similar expressions identify forward-looking statements. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof.

ITEM 1. BUSINESS

Echelon Corporation ("Echelon" or the "Company") was incorporated in California in 1988 and reincorporated in Delaware in 1989. The Company's principal executive offices are located at 4015 Miranda Avenue, Palo Alto, California 94304, and its telephone number is (650) 855-7400. Echelon can also be reached by visiting its website at www.echelon.com.

The Company develops, markets and supports a family of hardware and software products and services that enables original equipment manufacturers ("OEMs") and systems integrators to design and implement open, interoperable, distributed control networks. A control network enables any group of electrical devices, called nodes, to be linked together to implement sensing, monitoring, control and communications capabilities for a variety of applications. Control networks, an alternative to the traditional approach of centralized control, offer decreased costs of installation and maintenance and the ability to implement multi-vendor systems, thereby increasing competition while providing expanded features, flexibility and functionality. Echelon's control networking technology allows intelligence and communications capabilities to be embedded into individual control devices that can be connected together through a variety of communications media, such as a twisted pair of wires (data cable) and the existing power lines in a facility. The intelligent, networked control devices are then able to communicate with each other, peer-to-peer, to perform the desired control functions. In effect, the network becomes the controller, eliminating the need for central controllers, significantly reducing wiring costs and enhancing system functionality and flexibility.

Control systems manage key functions in virtually every type of facility that affects our daily lives. These functions can be as simple as turning a light on and off and as complex as operating a chemical production line. Traditionally, most control systems have incorporated closed, centrally-controlled architectures, where the intelligence is in the central controller and complex wiring and customization are required for communication. These traditional control systems share many of the same drawbacks of centralized computing architectures that rely upon mainframes and minicomputers to communicate to "dumb" terminals that lack independent processing capabilities. These disadvantages, which include high installation and life-cycle costs, limited functionality and scalability, and a single point of failure, have limited the market opportunity for control systems because end-users find it costly and difficult to adapt these systems to their changing needs. To overcome these limitations, OEMs, systems integrators and end-users are increasingly moving from closed centrally-controlled systems towards open, distributed control networks.

The Company offers a comprehensive set of products and services, including transceivers, control modules, routers, network interfaces, development tools and software tools and toolkits, that provide the infrastructure and support required to build and implement multi-vendor, open, interoperable, control network solutions. The Company's products are based on its LONWORKS networking technology, an open standard for interoperable networked control. The Company's objective is to establish its LONWORKS technology and products as the leading solution for networked control applications. To achieve this goal, the Company intends to extend its technological expertise, target industry-leading OEM customers, develop a systems integrator distribution channel, integrate LONWORKS control networks with enterprise data networks and leverage international market opportunities.

The Company markets its products and services to OEMs and systems integrators in the building, industrial, transportation, home and other automation markets. The Company sells primarily through a direct sales force in North America and other countries where it has marketing and sales operations, and augments its direct sales efforts with distributors in Europe, Japan and Asia Pacific. Representative customers include Bombardier Inc. ("Bombardier"), Edwards High Vacuum International Ltd. ("Edwards"), Fuji Electric Company Limited ("Fuji Electric"), Hitachi Limited ("Hitachi"), Honeywell, Inc. ("Honeywell"), Johnson Controls, Inc. ("Johnson Controls"), Kawasaki Limited ("Kawasaki"), Landis & Staefa, Staefa Control System Corporation ("Landis & Staefa") and Raytheon Company ("Raytheon").

Industry Background

Control systems manage key functions in a variety of facilities. A common application of a control system is to enable a thermostat to communicate with other equipment in a building to automatically adjust temperature and airflow. In addition to interconnecting and monitoring heating, ventilation and air conditioning ("HVAC"), control systems are used within buildings to manage such functions as elevators, lighting, security and access control. In industrial facilities, these systems are used to automate semiconductor manufacturing equipment, oil pumping stations, textile dyeing machinery and hundreds of other applications. In transportation systems, control systems are used to regulate such features as propulsion, braking and heating systems.

Control systems consist of an array of hardware devices and software used to collect data from the physical world and convert that data to electrical signals. These signals, in turn, provide information that can be used to effect responses based upon pre-

programmed rules and logic. Traditionally, most control systems have incorporated closed, centrally-controlled architectures. These systems share many of the same drawbacks of centralized computing architectures that rely upon mainframes and minicomputers to communicate to “dumb” terminals that lack independent processing capabilities.

Products for control systems are typically designed and manufactured by OEMs that focus on one or more vertical markets, such as HVAC systems for buildings, or braking control systems for trains. Control systems are typically installed and maintained by specialty contractors, or “systems integrators”, and in some instances by the in-house installation and maintenance divisions of OEMs. Closed, centralized control systems have a number of inherent disadvantages for OEMs, systems integrators and end-users. OEMs, as the designers of control systems and, in some instances, developers of their own protocols, incur significant development and ongoing support expense to implement and maintain their closed infrastructures. In addition, supporting such a closed infrastructure takes valuable resources away from developing competitive applications and limits the OEM’s ability to leverage the product development efforts of third party companies who use open platforms. Finally, centralized systems also risk complete shutdown if the central controller fails.

For systems integrators, the installation of closed, centralized control systems is typically characterized by the time-consuming and costly physical task of installing large amounts of wire and conduit to connect each component to one or more central controllers. Once the physical infrastructure is installed, specially-trained and highly-skilled personnel must program, install and “debug” detailed control logic software into the controllers in order to manage the disparate components. To the extent that a facility incorporates control systems from more than one OEM, systems integrators also spend considerable time connecting systems that were not designed to interoperate, such as HVAC and fire/life/safety systems. This complex process also makes modifications to the system expensive and time consuming. Because of the excessive costs of installing and modifying closed, centrally-controlled systems, end-users, who ultimately must pay for these products and services, often cannot acquire new applications at an affordable cost. The Company believes that these factors have reduced the market opportunity for both OEMs and systems integrators to sell new products, functions and applications to end-users.

OEMs, systems integrators and end-users are increasingly seeking to overcome the limitations of closed, centralized systems. As with the computer industry’s move away from centralized computing architectures, the Company believes that across a broad range of control applications, the control industry is moving away from custom, wiring-intensive and closed interconnection schemes among various system components, towards open, interoperable, distributed architectures in which the control intelligence resides among the sensors and actuators in an intelligent network, rather than in central controllers.

The Echelon Solution

Echelon develops, markets and supports a family of hardware and software products and services that enables OEMs and systems integrators to design and implement open, interoperable, distributed control networks. Echelon’s networking technology allows intelligence and communications capabilities to be embedded into individual control devices that can be connected together through a variety of communications media such as a twisted pair of wires (data cable) and the existing power lines in a facility. The intelligent, networked control devices are then able to communicate with each other, peer-to-peer, to perform the desired control functions. For example, a temperature sensor might detect a change in temperature and send a message over the network that is received and acted upon by other devices that have been configured to accept the message. In effect, the network becomes the controller, eliminating the need for central controllers, significantly reducing wiring costs and enhancing system functionality and flexibility.

The Company offers a comprehensive set of products and services that provides the infrastructure and support required to build and implement open, multi-vendor, interoperable, control network solutions for building, industrial, transportation, home and other automation markets. The Company’s products are based on its LONWORKS networking technology, an open standard for interoperable networked control. In a LONWORKS control network, intelligent control devices, called nodes, communicate using the Company’s LonTalk protocol. Each node in the network contains embedded intelligence that implements the protocol and performs local sense and control functions. At the core of this embedded intelligence is the Neuron Chip, an integrated circuit that was initially designed by Echelon and is currently manufactured and sold by Motorola, Inc. (“Motorola”) and Toshiba Corporation (“Toshiba”) (see “-Strategic Alliances”). In addition, the Company offers transceivers that couple the Neuron Chip to the communications medium; control modules that are intended to help to reduce OEM development cost; intelligent LONWORKS routers that allow users to build large systems containing different networking media; network interfaces that connect computers to the network; development tools that allow OEMs to design LONWORKS technology into their products; and software tools and toolkits that allow users to install, monitor, maintain and control their systems.

Based on the Company’s past experience in implementing its products, the Company believes that its family of products and services provides the following benefits to its customers:

- *Installation Cost Savings.* LONWORKS based open control networks are intended to be less expensive to install than closed, centrally-controlled systems. By replacing individual hard-wired connections with shared network channels, the Company believes that wiring and conduit material and labor costs can be substantially reduced. By eliminating the need to program and debug complex control logic software, systems can be designed and commissioned more quickly by personnel with less specialized training. In addition, LONWORKS based networks are designed not to require expensive, performance-limiting

gateways (which are used to enable communication between disparate systems) to connect control systems from multiple vendors.

- *Life-Cycle Cost Savings.* LONWORKS networks can eliminate many of the sources of high life-cycle costs found in traditional control systems. By providing an open, interoperable platform, LONWORKS networks allow end-users to select the most cost-effective products and services for their applications from a broad range of OEMs. In addition, the Company believes that the inherent flexibility of the LONWORKS network architecture permits modifications to the control system, including adding new products, features and functions, to be made at significantly lower cost. LONWORKS technology also enables devices to be logically “rewired” across the network without the need to run new physical wire or to replace or reprogram devices.
- *Improved Quality and Functionality.* With LONWORKS networks, end-users may customize their control networks to their specific needs by incorporating products and applications from an array of applications providers. In open LONWORKS networks, any piece of information from any device can easily be shared with any other device in the same control system, in a different control system, or in a computer system, without the need for custom programming or additional hardware. For example, a measurement system can analyze information from a manufacturing system and send back improvements within seconds if the two systems communicate directly, rather than through a process where information is gathered and communicated manually over days or even weeks.
- *Improved Reliability.* In a fully-distributed LONWORKS control network, there is no single point of failure. Typically, the failure of a device on the network only affects a small subset of devices with which it interacts. Unlike devices in a centrally-controlled system, devices in a LONWORKS network are “self-aware” and can take appropriate actions, such as returning to default set-points, to adapt to the error condition. In addition, by utilizing its built-in processing power, each device can keep track of its own status and can report problems before they occur.
- *Increased Market Demand.* The Company believes that by eliminating high-cost centralized controllers and fostering interoperability between devices, LONWORKS technology enables both OEMs and systems integrators to create low-cost, customized solutions to satisfy market demands that have not been met by traditional control systems.

Strategy

Echelon’s objective is to be the leading supplier of products and services used in the growing market for open, interoperable control networks. Key elements of the Company’s strategy to accomplish this objective include:

- *Extend Technological Leadership.* Echelon’s LONWORKS networking technology is the foundation for a low-cost, flexible, interoperable and reliable platform for implementing networked control applications. The Company intends to leverage its position as the developer of the LONWORKS platform, along with its expertise in networking software, distributed control systems and digital and analog circuit design, to deliver a full range of highly-functional and cost-effective products and systems that meet its customers’ needs.
- *Target Industry-Leading OEM Customers.* The Company seeks to develop broad industry support for its LONWORKS platform. To help accomplish this objective, the Company works closely with industry-leading OEMs, such as Bombardier, Edwards and Honeywell, in the product design process and invests in programs that enable these customers to develop, market and support their products. The Company believes that close collaborative relationships with OEM customers will continue to accelerate the transition of its targeted industries toward open, multi-vendor architectures for control networks.
- *Develop Systems Integrator Distribution Channel.* The Company believes that end-users increasingly prefer multi-vendor control networks in order to decrease life-cycle costs and improve the functionality of their control systems. In order to capitalize on this opportunity, the Company complements its OEM distribution channel by aggressively targeting independent systems integrators as an additional channel to install, configure and maintain highly-functional control networks for end-users. To more effectively meet the needs of systems integrators, the Company began shipping its LonPoint System in 1998, which provides the infrastructure needed to implement open, interoperable, distributed control networks. The Company intends to continue promoting the benefits of the LONWORKS technology and products to systems integrators and end-users as a means to create stronger demand for its control network solutions.
- *Increase Penetration of Existing Vertical Markets.* While the Company’s control network products are applicable across a broad range of industries, the Company intends to continue to focus its marketing efforts on those vertical markets in which it has established a large customer base, namely the building, industrial, transportation and home automation industries. The Company works closely with OEMs and systems integrators in these vertical markets to identify market needs, and targets its product development efforts to meet those needs. For instance, in 1997, the Company began shipping its network operating system, LONWORKS Network Services, in response to the needs of OEMs for a multi-user platform to install, maintain, monitor and interface with control networks. In addition, the Company established the LONMARK Interoperability Association in May 1994 to facilitate the development and implementation of interoperable LONWORKS based control systems within various industries.

Several industry leaders in the Company's targeted markets have announced and currently promote products that conform to these standards.

- *Integrate LONWORKS Control Networks with Enterprise Data Networks.* The Company believes that the seamless integration between LONWORKS control networks and enterprise data networks is important to enable end-users to remotely monitor and manage their control networks, as well as to collect and analyze data generated by their control networks. To meet this market demand, the Company is developing systems and technology that combine standard data networking and communications protocols with the Company's products and technology. In support of this effort, the Company entered into strategic agreements with Toshiba and Cisco Systems, Inc. ("Cisco") to develop products that integrate LONWORKS control networks with enterprise data networks.
- *Leverage International Market Opportunities.* With sales and marketing operations in nine countries and 55.4% of the Company's total revenues in 1998 attributable to international sales, the Company has established a significant international presence. The Company plans to continue to devote significant resources to international sales, marketing and product development efforts to capitalize on markets for control networks outside of the United States. For example, the Company's most popular power line transceiver was designed to meet the requirements imposed by regulators in both North America and Europe, enabling OEMs to leverage their product development programs across these markets.

Markets, Applications and Customers

The Company markets its products and services primarily in North America, Europe, Japan and selected Asia Pacific countries. The Company's target markets include:

Building Automation. Companies worldwide are using LONWORKS control networks in most facets of the building automation industry, including access control, automatic doors, elevators, energy management, fire/life/safety, HVAC, lighting, metering, security and window blinds. The Company believes that LONWORKS networks are widely accepted because they lower installed system cost, reduce ongoing life-cycle costs and increase functionality. For example, a major automation project has been completed for British Airways' new combined business center, BA Waterside, near Heathrow Airport. The project uses LONWORKS control networks throughout the six-building campus to connect the building management, lighting and access control systems together in a unified system. Echelon's OEM customers in the building automation market include Honeywell, Johnson Controls, Landis & Staefa, Philips Lighting B.V., Schindler Elevator Corp. and Siebe.

Industrial Automation. LONWORKS control networks are found in semiconductor fabrication plants, gas compressor stations, gasoline tank farms, oil pumping stations, water pumping stations, textile dyeing machinery, pulp and paper processing equipment, automated conveyor systems and many other industrial environments. In such industrial installations, LONWORKS networks can replace complex wiring harnesses, reduce installation costs, eliminate expensive programmable logic controllers and distribute control among sensors, actuators and other devices, thereby reducing system costs, improving control and eliminating the problem of a single point of failure, among other things. For example, Edwards, a leading supplier of vacuum pumping systems to the semiconductor industry, is using LONWORKS control networks within each pumping station to replace complex wiring used to connect various motors, sensors, actuators and displays. The same control network is extended to connect up to 400 pumping stations together in a semiconductor fabrication plant to form a complete pumping system. Echelon's OEM customers in the industrial automation market include Brooks Instrument, Edwards, Fuji Electric, Hitachi, Lam Research Corporation and Marley Pump.

Transportation. Echelon's technology is used in important transportation applications, including railcars, light rail, buses, motor coaches, fire trucks, naval vessels and aircraft. LONWORKS networks can be used in these transportation systems to improve efficiency, reduce maintenance costs and increase safety and comfort. LONWORKS technology has been specified as the standard for electro-pneumatic braking for freight transportation trains by the American Association of Railroads, and as one of the standards by the New York City Transit Authority for the replacement of its subway cars. Key OEMs in the transportation market include Bombardier, Cummins Engine, Kawasaki and Raytheon.

Home Automation and Other. While the home automation market is still in its infancy, numerous companies are now selling LONWORKS based products for HVAC, lighting, security, utility meters and whole house automation. A number of utility companies located throughout the world, including CSW Communications (the holding company for Central and Southwest Utilities), and Detroit Edison in the United States, and Sydkraft and Scottish Hydro Electric in Europe, currently are pursuing residential projects involving LONWORKS networks. Other industries in which LONWORKS control networks have been utilized or are being developed for use include telecommunications (including alarm systems for switching equipment) and agriculture (including feeding and watering systems).

Products and Services

The Company offers a comprehensive set of over 80 products and services marketed under the LONWORKS brand name that provide the infrastructure and support required to implement and deploy open, interoperable, control network solutions. All of the Company's products either incorporate or operate with the Neuron Chip and the LonTalk protocol. While the Company recommends broad use of various of its products with other Echelon products, there is no inherent requirement for a customer to do so, given the

Company's open networking technology. For instance, a customer's product could incorporate a transceiver purchased from the Company but could be installed with software that did not incorporate the Company's network operating system.

LONWORKS Control and Connectivity Products. This suite of hardware products, some with embedded firmware, serves as the physical interface between the control software resident on the managed devices and the cabling and wiring infrastructure. These products include a variety of transceivers, control modules, routers and network interface devices. Standard, off-the-shelf LONWORKS transceivers and control modules simplify the development of LONWORKS nodes, provide the foundation for interoperability and reduce the development cost and time for an OEM's product development. LONWORKS routers provide transparent support for multiple media, which makes it possible to signal between different types of media, such as twisted pair, power line, radio frequency, optical fiber and infrared. Routers can also be used to control network traffic and partition sections of the network from traffic in another area, increasing the total throughput and speed of the network. Network interfaces can be used to connect computers to a LONWORKS network. The Company's FTT-10 transceiver product, one of the LONWORKS Control and Connectivity products, and the FTT-10A successor product, which permits communication over a twisted pair of wires, together have generated approximately 21% and 19% of the Company's revenues during the years ended December 31, 1998 and 1997, respectively. The FTT-10 was released in May 1994 and the FTT-10A was released in May 1997.

LONWORKS Network Services ("LNS"). Echelon's network operating system, LNS, serves as the platform for installing, maintaining, monitoring and interfacing with control networks. The LNS family of products adds the power of client-server architecture and component-based software design into control systems and allows tools from multiple vendors to work together. The Company's most recent release of LNS is version 2.0, which the Company expects to ship in March 1999.

The LonMaker for Windows tool, built on the LNS network operating system and the Visio technical drawing package, gives users a familiar, CAD-like environment in which to design their network's control system. The graphical nature of the LonMaker tool provides an intuitive interface for designing, installing and maintaining multi-vendor, open, interoperable LONWORKS control networks. LNS also allows multiple users, each running their own copy of LonMaker for Windows or other LNS-based tools, to utilize the system in parallel, thereby streamlining the design and commissioning process, and facilitating future adds, moves and changes. LonMaker for Windows, released in version 1.0, was first shipped in June 1998. The Company's most recent release of LonMaker for Windows is version 2.0, which the Company expects to ship in March 1999.

LonPoint System Products. In the second quarter of 1998, the Company began shipment of the LonPoint System, which provides the infrastructure to implement open, interoperable, distributed control networks. In contrast to traditional closed, centrally-controlled systems, the LonPoint System offers a flat network architecture in which every device performs control processing. Distributing the processing throughout the network lowers installation and overall life-cycle costs, increases reliability by eliminating central points of failure, and provides the flexibility to adapt the system to a wide variety of applications.

The LonPoint System includes a family of hardware and software products. Hardware products include interface modules (which convert a variety of legacy digital and analog sensors and actuators into intelligent and interoperable network devices), routers (which provide transparent connectivity and intelligent message passing between various combinations of standard LONWORKS media), and scheduler modules (which provide system timekeeping and state coordination). The LonPoint System is installed using the LonMaker for Windows tool and includes LNS software plug-ins that provide end-users with a customized configuration view of each LonPoint module, thereby reducing the time and training required to configure LonPoint interface modules.

Development Tools. Echelon provides development tools that are used by an OEM to design LONWORKS technology into the OEM's products. The LonBuilder Developer's Workbench integrates a complete set of tools for developing LONWORKS based control networks. These tools include an environment for developing and debugging applications at multiple nodes, a network manager to install and configure these nodes, and a protocol analyzer to examine network traffic to ensure adequate capacity and to debug errors. The Company's most recent release of this product is version 3.01, which was first shipped in July 1996.

The NodeBuilder development tool is designed to make it easy for OEMs to develop and test individual LONWORKS nodes. It uses a familiar Windows based development environment with easy-to-use on-line help. The NodeBuilder tool can complement the development capabilities of the LonBuilder Developer's Workbench, since the NodeBuilder tool can be used to develop individual nodes that are then integrated and tested as a system using the LonBuilder tool. The Company's most recent release of the NodeBuilder development tool is version 1.5, which was first shipped in August 1996.

Training and Support. The Company conducts a variety of technical training courses covering its LONWORKS network technology and products. These courses are designed to provide hands-on, in-depth and practical experience that can be used immediately by OEMs and systems integrators of LONWORKS systems. The Company also offers technical support to its customers on a per incident and annual contract basis. These support services are intended to ensure proper use of the Company's products and to shorten development time for the customer's products that use Echelon's technology through timely resolution of the customer's technical problems. As of February 28, 1999, the Company had 13 employees in the United States, Japan, China and the United Kingdom engaged in training and support.

Sales and Marketing

The Company markets and sells its products and services to OEMs and increasingly to systems integrators to promote the widespread use of its LONWORKS technology. In addition, the Company believes that awareness of the benefits of LONWORKS networks among end-users will increase demand “pull” for the Company’s products. In North America, the Company sells its products through a direct sales organization. Outside the United States, direct sales, applications engineering and customer support are conducted through the Company’s operations in China, France, Germany, Hong Kong, Japan, the Netherlands, South Korea, Sweden and the United Kingdom. Each of these offices is staffed primarily with local employees. The Company supplements its worldwide sales personnel with application engineers and technical and industry experts working in the Company’s headquarters. The Company also leverages its selling efforts through the use of an in-house telephone sales staff. Internationally, the Company augments its direct sales with the use of distributors. These distributors tend to specialize in certain geographical markets. The Company sells its products in Europe principally through EBV Elektronik GmbH (“EBV”), its sole independent European distributor, and through its direct sales force. The Company relies solely on distributors in certain countries in the Asia Pacific region, including Australia and Taiwan, and in Latin America, through its distributor in Argentina. See “Factors That May Affect Future Results of Operations—Dependence on OEMs and Distribution Channels.”

The Company has recently implemented an authorized network integrator program to increase the distribution of its products through systems integrators worldwide. These systems integrators design, install and service control systems using the Company’s LonPoint System with legacy devices and other manufacturers’ products that meet the certification guidelines of the LONMARK Interoperability Association, thereby reducing dependence on single-vendor products, eliminating the risks of centralized, closed controllers and supporting less complex, peer-to-peer system architectures. The Company provides these systems integrators with access to the training, tools and products required to cost-effectively install, commission and maintain open, multi-vendor distributed control systems based on LONWORKS control networks.

The Company’s marketing efforts are augmented by the LONMARK Interoperability Association and the LonUsers International group. The LONMARK Interoperability Association was formed by Echelon in May 1994 and has approximately 220 members. This Association defines the technical standards for interoperability for LONWORKS technology and promotes the use of open control networks based on the LONMARK standard. The purpose of LonUsers International, established by Echelon in 1991, is to provide a forum in which parties can share recent information concerning LONWORKS technology and applications, build alliances and support the LONWORKS standard for control networking. In 1998, LonUsers International meetings in North America, Europe and Asia drew nearly 2300 participants.

Strategic Alliances

Neuron Chips, which are important components in control network nodes, are manufactured and sold by both Motorola and Toshiba. The Company has entered into licensing agreements with each of Motorola and Toshiba. Among other things, the agreements grant Motorola and Toshiba the worldwide right to manufacture and distribute Neuron Chips using technology licensed from the Company and require the Company to provide support and unspecified updates to the licensed technology over the terms of the agreements. The Motorola and Toshiba agreements expire in January 2001 and January 2000 respectively, unless renewed. Motorola has announced that it will discontinue distribution of Neuron Chips after January 31, 2001. However, both Motorola and Toshiba have the right to terminate the agreements at any time. While the Company developed the first version of the Neuron Chip, Motorola and Toshiba subsequently developed improved, lower-cost versions of the Neuron Chip that are presently utilized in products developed and sold by the Company and its customers. The Company currently has no other source of supply for Neuron Chips and has neither the resources nor the skills to replace either Motorola or Toshiba as a manufacturer of Neuron Chips. The Company is attempting to license a second source for design, development and supply of the Neuron Chip as a replacement for Motorola. Both Motorola and Toshiba have played, and Toshiba is expected to continue to play, a key role in the development and marketing of LONWORKS technology. The loss of Toshiba as a supplier of the Neuron Chip, or the failure of the Company to license a second supplier of the Neuron Chip to replace Motorola in a timely manner and on commercially reasonable terms, could have a material adverse effect on the business, operating results and financial condition of the Company. There can be no assurance that the Company would be able to locate an alternate source for the design, manufacture or distribution of Neuron Chips. See “Factors That May Affect Future Results of Operations—Dependence on Key Manufacturers”.

The Company has separate agreements with Toshiba and Cisco to develop products that integrate LONWORKS control networks into enterprise data networks. Echelon’s joint development agreement with Toshiba is intended to enable products and technologies to be developed using the Java programming language to program LONWORKS control devices. The agreement with Cisco is intended to result in products that simplify enterprise-wide integration of LONWORKS control and Internet protocol data networks.

Product Development

The Company’s future success depends in large part on its ability to enhance existing products, lower product cost and develop new products that maintain technological competitiveness. The Company has made and intends to continue to make substantial investments in product development. The Company continues to make significant engineering investments in bringing its LNS network operating system and LonPoint System products to market. Extensive product development input is obtained from customers

and by monitoring end-user needs and changes in the marketplace. See “Factors That May Affect Future Results of Operations—New Products and Rapid Technological Change.”

The Company’s total expenses for product development for fiscal 1998, 1997 and 1996 were \$7.6 million, \$7.1 million and \$7.5 million, respectively. The Company anticipates that it will continue to commit substantial resources to product development in the future and that product development expenses may increase in the future. To date, the Company’s development efforts have not resulted in any capitalized software development costs. As of February 28, 1999, the Company’s product development organization consisted of 50 personnel.

Competition

Competition in the Company’s markets is intense and involves rapidly changing technologies, evolving industry standards, frequent new product introductions and rapid changes in customer requirements. To maintain and improve its competitive position, the Company must continue to develop and introduce, on a timely and cost-effective basis, new products, features and services that keep pace with the evolving needs of its customers. The principal competitive factors affecting the markets for the Company’s control network products are customer service and support, product reputation, quality, performance and price, and product features such as adaptability, scalability, ability to integrate with other products, functionality and ease of use. The Company believes it has in the past generally competed favorably with offerings of its competitors on the basis of these factors. However, there can be no assurance that the Company will continue to be able to compete effectively based on these or any other competitive factors in the future.

In each of its markets, the Company competes with a wide array of manufacturers, vendors, strategic alliances, systems developers and other businesses. The Company’s competitors include some of the largest companies in the electronics industry, such as Siemens AG (“Siemens”) in the building and industrial automation industries and Allen-Bradley, a subsidiary of Rockwell International (“Allen-Bradley”), and Groupe Schneider (“Schneider”) in the industrial automation industry. Many of the Company’s competitors, alone or together with their trade associations and partners, have longer operating histories, significantly greater financial, technical, marketing, service and other resources, significantly greater name recognition and broader product offerings. As a result, such competitors may be able to devote greater resources to the development, marketing and sale of their products, and may be able to respond more quickly to changes in customer requirements or product technology. In addition, those competitors that manufacture and promote closed, centralized proprietary systems may enjoy a captive customer base dependent on such competitors for service, maintenance, upgrades and enhancements. Accordingly, there can be no assurance that the Company will be able to compete successfully with existing or new competitors, or that competition will not have a material adverse effect on the business, operating results or financial condition of the Company.

Many of the Company’s current and prospective competitors are dedicated to promoting closed or proprietary systems, technologies, software and network protocols or product standards that differ from, or are incompatible with, those of the Company. In some cases, companies have established associations or cooperative relationships to enhance the competitiveness and popularity of their products, or to promote such different or incompatible technologies, protocols and standards. For example, in the building automation market, the Company faces widespread reluctance by vendors of traditional closed or proprietary control systems (who enjoy a captive market for servicing and replacing equipment) to utilize the Company’s interoperable technologies, as well as strong competition by large trade associations that promote alternative technologies and standards in their native countries, such as the BatiBus Club International in France and the European Installation Bus Association in Germany (each of which has over 100 members and licensees). Other examples include the CEBus Industry Council, which is the proponent of an alternative protocol to the Company’s LonTalk protocol for use in the home automation industry, and a group comprised of Asea Brown Boveri, ADtranz AB, Siemens, GEC Alstrom and other manufacturers that support an alternative rail transportation protocol to LONWORKS networks. The Company works with standards-setting organizations to establish open markets for LONWORKS products in the Company’s targeted markets. There can be no assurance that the Company’s technologies, protocols or standards will be successful in any of its markets, or that the Company will be able to compete with new or enhanced products or standards introduced by existing or future competitors. Any increase in competition or failure by the Company to effectively compete with new or enhanced products or standards could result in fewer customer orders, price reductions, reduced order size, reduced operating margins and loss of market share, any of which could have a material adverse effect on the business, operating results or financial condition of the Company. See “Factors That May Affect Future Results of Operations—Competition.”

LONWORKS technology is open, meaning that many of the Company’s key technology patents are broadly licensed without royalties or license fees. As a result, the Company’s customers are capable of developing products that compete with some of the Company’s products. Because some of the Company’s customers are OEMs that develop and market their own control systems, these customers in particular could develop competing products based on the Company’s open technology. This could decrease the market for the Company’s products, increase competition, and have a material adverse effect on the Company’s business, operating results and financial condition.

Manufacturing

The Company's manufacturing strategy is to outsource production to third parties where it is more cost-effective and to limit its internal manufacturing to such tasks as quality inspection, system integration, testing and order fulfillment. Echelon maintains manufacturing agreements with Motorola and Toshiba related to the Neuron Chip, an important component in many of the Company's products. Additionally, for certain key products, the Company utilizes outsource manufacturers including GET Manufacturing, Inc. ("GET") and muRata Electronics North America, Inc. ("muRata"). These outsource manufacturers procure material and assemble, test and inspect the final products to the Company's specifications.

The Company's future success will depend, in significant part, on its ability to successfully manufacture its products cost-effectively and in sufficient volumes. To date, the Company has not experienced any significant delays or material unanticipated costs resulting from the use of third party manufacturing; however, such a strategy involves certain risks, including the potential absence of adequate capacity and reduced control over delivery schedules, manufacturing yields, quality and costs. Currently, Motorola and Toshiba are the Company's only source of supply for Neuron Chips. Motorola has announced that it will discontinue distribution of Neuron Chips after January 31, 2001, and the Company is attempting to license a second source of supply for Neuron Chips to replace Motorola. The loss of Toshiba as a supplier of the Neuron Chip or the failure of the Company to license a second supplier to replace Motorola could have a material adverse effect on the business, operating results and financial condition of the Company. Further, other key components are currently purchased only from sole or limited sources. Any interruption in the supply of these components, or the inability of the Company to procure these components from alternate sources at acceptable prices and within a reasonable time, could have a material adverse effect upon the Company's business, operating results and financial condition. See "Factors That May Affect Future Results of Operations—Dependence on Key Manufacturers."

Government Regulation

Many of the Company's products and the industries in which they are used are subject to U.S. and foreign regulation. Government regulatory action could greatly reduce the market for the Company's products. For example, the power line medium (the communications medium used by some of the Company's products) is subject to special regulations in North America, Europe and Japan. These regulations limit the ability of companies in general to use power lines as a communication medium. In addition, some of the Company's competitors have attempted to use regulatory actions to reduce the market opportunity for the Company's products or to increase the market opportunity for the competitors' products. For example, the Consumer Electronics Manufacturers Association ("CEMA"), a trade association that developed the CEBus protocol for use in home automation applications, has proposed that the Federal Communications Commission ("FCC") adopt a standard for television-cable compatibility that encompasses CEBus. CEMA has also proposed the use of such standard with respect to an FCC rule making relating to the commercial availability of navigation devices, such as set-top boxes. The Company has resisted these efforts and will continue to oppose competitors' efforts to use regulation to impede competition in the markets for the Company's products. There can be no assurance that existing or future regulations or regulatory actions would not adversely affect the market for the Company's products or require significant expenditures of management or financial resources, any of which could have a material adverse effect on the Company's business, operating results and a financial condition. See "Factors That May Affect Future Results of Operations—Regulatory Actions."

Proprietary Rights

The Company is the owner of numerous patents, trademarks and logos. As of February 28, 1999, the Company had received 71 United States patents, and has 18 patent applications pending. Some of these patents have also been granted in selected foreign countries. Many of the specific patents that are fundamental to LONWORKS technology have been licensed to the Company's customers with no license fee or royalties. The principal value of the remaining patents relates to the Company's specific implementation of its products. See "Factors That May Affect Future Results of Operations—Competition" and "—Limited Protection of Intellectual Property Rights."

The Company holds several registered trademarks in the United States, including Echelon, LonBuilder, LONMARK, LonTalk, LonUsers, LONWORKS, Neuron and NodeBuilder. The Company has also registered some of its trademarks and logos in foreign countries.

Employees

As of February 28, 1999, the Company had 166 employees worldwide, of which 50 were in product development, 23 were in operations, 57 were in sales and marketing, 13 were in customer support and training and 23 were in general and administrative. Approximately 126 employees are located at the Company's headquarters in Palo Alto, California. The Company has employees in nine countries worldwide, with the largest concentrations outside the United States in Japan, the Netherlands and the United Kingdom. None of the Company's employees is represented by a labor union. The Company has not experienced any work stoppages and considers its relations with its employees to be good.

Executive Officers of the Registrant

M. Kenneth Oshman has been President and Chief Executive Officer of the Company since December 1988 (age 58). Mr. Oshman, with three associates, founded ROLM Corporation (“ROLM”), a telecommunications equipment company, in 1969. He was Chief Executive Officer, President, and a director at ROLM from its founding until its merger with IBM in 1984. Following the merger, he became a Vice President of IBM and a member of the Corporate Management Board. He remained in that position until he left IBM in 1986. Prior to founding ROLM, Mr. Oshman was a member of the technical staff at Sylvania Electric Products from 1963 to 1969. In addition to his responsibilities at Echelon, Mr. Oshman serves as a director of Sun Microsystems, Knight-Ridder, Inc. and CMC Industries, Inc. Mr. Oshman earned B.A. and B.S.E.E. degrees from Rice University and M.S. and Ph.D. degrees in Electrical Engineering at Stanford University.

Frederik Bruggink has been Vice President, Europe, Middle East and Africa, since April 1996 (age 43). Mr. Bruggink joined the Company from Banyan Systems, where he was Vice President, Europe. From 1985 to 1993, Mr. Bruggink held several positions at Stratus Computer, including General Manager positions for Holland, Benelux, and Northern Europe. His last position at Stratus was Vice President, Northern Europe (including Germany). Prior to joining Stratus, he held sales positions at Burroughs Computers. Mr. Bruggink attended the University of Leiden.

Lawrence Y.H. Chan joined the Company in April 1997 as Vice President of Asia Pacific and Japan and is based in Hong Kong (age 48). Prior to joining the Company, Mr. Chan was Vice President of Asia Pacific and Japan for Banyan Systems. Prior to that, he held management positions at Stratus Computer, both in the U.S. and Hong Kong. Prior to joining Stratus, he held positions with ComputerVision, Oriental Data Systems, Ltd., Hong Kong Terminals, John Swire and Sons, Ltd., Kowloon Container Terminals Ltd. and NCR Hong Kong Ltd. Mr. Chan received a General Certificate of Education from the University of London, a degree in Electrical Engineering from Hong Kong Technical College and a degree in Computer Programming from Hong Kong University.

Kenneth E. Lavezzo has been Vice President of Operations of the Company since September 1990 and has been employed by the Company since 1989 (age 57). Mr. Lavezzo joined the Company from ROLM, where he was the Director responsible for Phonemail and Voice Applications. He also served as General Manager of the Phones Division. Mr. Lavezzo joined ROLM in 1973 and held a variety of other positions ranging from product design and program management to production and manufacturing management. Prior to joining ROLM, he spent seven years at Hewlett-Packard as a member of the technical staff developing medical products and high-speed data acquisition products. Mr. Lavezzo received a B.S. degree in Electrical Engineering from the University of California at Berkeley.

Peter A. Mehring has been Vice President, Engineering of the Company since March 1998 (age 37). From January 1996 to March 1998, Mr. Mehring held a variety of positions at Umax Computer Corporation (“Umax”) where he was a Founder, General Manager, and Vice President of research and development. From March 1995 to December 1995, Mr. Mehring held engineering management positions at Radius, Inc., Power Computing Corporation, Sun Microsystems, Inc., and Wang Laboratories, Inc. Mr. Mehring received a B.S. degree in Electrical Engineering from Tufts University, Massachusetts.

Oliver R. Stanfield has been Vice President of Finance & Chief Financial Officer of the Company since March 1989 (age 50). Mr. Stanfield joined the Company from ROLM, where he served in several positions since 1980, including Director of Pricing; Vice President, Plans and Controls; Vice President, Business Planning; Vice President, Financial Planning and Analysis; Treasurer; and Controller, Mil Spec Division. Prior to joining ROLM, Mr. Stanfield worked for ITTEL Corporation, Computer Automation and Rockwell International. Mr. Stanfield began his business career with Ford Motor Company in 1969 in various accounting positions while completing a B.S. in Business Administration and an M.B.A. degree from the University of Southern California.

Edwin R. Sterbenc joined the Company in April 1997 as Vice President, Americas (age 53). Prior to joining the Company, Mr. Sterbenc was with Tandem Computers, Inc. from 1987 to 1997. At Tandem, he held positions in sales, international sales and marketing. Prior to joining Tandem Computers, Inc., Mr. Sterbenc was Vice President of Sales at Syntelligence. He was a Sales Manager for Cullinet Software from 1984 to 1986, and held positions in sales, marketing and sales management at IBM from 1973 to 1984. Mr. Sterbenc worked at Inland Steel prior to joining IBM. Mr. Sterbenc holds a B.S. degree in Industrial Management and an A.A.S. degree in Computer Science from Purdue University.

Beatrice Yormark has been Vice President of Marketing and Sales of the Company since January 1990 (age 54). Ms. Yormark joined the Company from Connect, Inc., an on-line information services company, where she was the company’s Chief Operating Officer. Before joining Connect, Ms. Yormark held a variety of positions, including Executive Director of Systems Engineering for Telaction Corporation, Director in the role of Partner at Coopers & Lybrand, Vice President of Sales at INTERACTIVE Systems Corporation, and various staff positions at the Rand Corporation. Ms. Yormark received a B.S. degree in Mathematics from City College of New York and an M.S. degree in Computer Science from Purdue University.

ITEM 2. PROPERTIES

The Company leases approximately 55,000 square feet of office, manufacturing and distribution facilities in Palo Alto, California under two leases that expire on June 30, 2000. The Company has an option to extend the lease of a portion of the facilities for a five-year period. The aggregate rental expense under these leases was approximately \$1.4 million during 1998. The Company also leases office space for its sales and marketing employees in China, France, Germany, Hong Kong, Japan, the Netherlands and the United Kingdom. The aggregate rental expense for such office space was approximately \$400,000 during 1998. The Company believes that additional office space will be available as required on acceptable terms. For additional information regarding the Company's obligations under leases, see Note 4 "Commitments" on page 38.

ITEM 3. LEGAL PROCEEDINGS

There are no material legal proceedings to which the Company is a party of to which any of its properties are subject, nor are there any material legal proceedings known to the Company to be contemplated by any governmental authority against the Company or any of its properties.

ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS

No matters were submitted to a vote of security holders during the fourth quarter of the Company's fiscal year ended December 31, 1998.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

Echelon's Common Stock is listed on the Nasdaq National Market under the symbol ELON. As of February 28, 1999, there were approximately 567 holders of record of the Common Stock. Because many of such shares are held by brokers and other institutions on behalf of stockholders, the Company is unable to estimate the total number of stockholders represented by these record holders. The Company has never paid dividends on its capital stock and does not expect to pay any dividends in the foreseeable future. The Company intends to retain future earnings, if any, for use in its business.

The following table sets forth the range of high and low sales prices of the Common Stock on the Nasdaq National Market since July 28, 1998, the date of the Company's initial public offering, as reported by Nasdaq.

<u>Period</u>	<u>Price Range</u>	
	<u>High</u>	<u>Low</u>
From July 28, 1998 through September 30, 1998	\$ 7.25	\$ 1.94
Quarter ended December 31, 1998	\$ 4.25	\$ 1.97

ITEM 6. SELECTED FINANCIAL DATA

The following selected consolidated financial data has been derived from the audited consolidated financial statements. The information set forth below is not necessarily indicative of results of future operations, and should be read in conjunction with Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and notes thereto in Item 8 of this Form 10-K in order to fully understand factors that may affect the comparability of the information presented below.

	Year Ended December 31,				
	1998	1997	1996	1995	1994
	(in thousands, except per share data)				
Consolidated Statement of Operations Data:					
Revenues:					
Product	\$ 29,163	\$ 24,665	\$ 20,708	\$ 20,183	\$ 14,368
Service.....	<u>3,038</u>	<u>3,637</u>	<u>3,282</u>	<u>3,160</u>	<u>2,364</u>
Total revenues.....	32,201	28,302	23,990	23,343	16,732
Cost of revenues:					
Cost of product.....	12,784	11,761	10,761	9,434	6,733
Cost of service.....	<u>1,836</u>	<u>1,810</u>	<u>1,142</u>	<u>1,141</u>	<u>1,006</u>
Total cost of revenues	<u>14,620</u>	<u>13,571</u>	<u>11,903</u>	<u>10,575</u>	<u>7,739</u>
Gross profit	<u>17,581</u>	<u>14,731</u>	<u>12,087</u>	<u>12,768</u>	<u>8,993</u>
Operating expenses:					
Product development	7,564	7,121	7,526	7,355	6,658
Sales and marketing.....	12,535	12,128	11,577	10,881	9,317
General and administrative.....	<u>4,119</u>	<u>4,004</u>	<u>3,921</u>	<u>4,386</u>	<u>3,268</u>
Total operating expenses.....	<u>24,218</u>	<u>23,253</u>	<u>23,024</u>	<u>22,622</u>	<u>19,243</u>
Loss from operations.....	(6,637)	(8,522)	(10,937)	(9,854)	(10,250)
Other income (expense):					
Interest and other income, net.....	<u>945</u>	<u>497</u>	<u>373</u>	<u>1,284</u>	<u>853</u>
Loss before provision for income taxes	(5,692)	(8,025)	(10,564)	(8,570)	(9,397)
Provision for income taxes.....	<u>159</u>	<u>189</u>	<u>152</u>	<u>143</u>	<u>86</u>
Net loss	<u>\$ (5,851)</u>	<u>\$ (8,214)</u>	<u>\$ (10,716)</u>	<u>\$ (8,713)</u>	<u>\$ (9,483)</u>
Basic net loss per share (1).....	<u>\$ (0.24)</u>	<u>\$ (0.44)</u>	<u>\$ (0.62)</u>	<u>\$ (0.56)</u>	<u>\$ (0.67)</u>
Shares used in computing basic net loss per share (1)...	<u>24,845</u>	<u>18,603</u>	<u>17,354</u>	<u>15,695</u>	<u>14,060</u>
Pro forma basic net loss per share (1).....	<u>\$ (0.20)</u>	<u>\$ (0.32)</u>			
Shares used in computing pro forma basic net loss per share (1).....	<u>29,405</u>	<u>25,756</u>			
Consolidated Balance Sheet Data:					
Cash, cash equivalents and short-term investments	\$ 29,053	\$ 7,853	\$ 8,051	\$ 16,044	\$ 24,210
Working capital.....	33,733	8,883	7,905	17,653	25,120
Total assets.....	41,950	16,816	15,855	24,547	31,124
Total stockholders' equity.....	35,786	8,800	7,138	15,978	22,799

(1) See Note 2 of Notes to Consolidated Financial Statements for an explanation of shares used in computing basic net loss per share and pro forma basic net loss per share.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

This Management's Discussion and Analysis of Financial Condition and Results of Operations includes a number of forward-looking statements which reflect the Company's current views with respect to future events and financial performance. These forward-looking statements are subject to certain risks and uncertainties, including those discussed in the "Factors That May Affect Future Results of Operations" and elsewhere in this Form 10-K that could cause actual results to differ materially from historical results or those anticipated. In this report, the words "anticipates", "believes", "expects", "future", "intends", and similar expressions identify forward-looking statements. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof.

OVERVIEW

Echelon Corporation develops, markets and supports a family of hardware and software products and services that enables OEMs and systems integrators to design and implement open, interoperable, distributed control networks. The Company offers its products and services to OEMs and systems integrators in the building, industrial, transportation, home and other automation markets. The Company provides a variety of technical training courses related to its products and underlying technology as well as customer support to its customers on a per incident or annual contract basis.

The Company markets its products and services in North America, Europe, Japan and selected Asia-Pacific countries through a direct sales organization augmented with the use of third-party distributors. International sales, which include both export sales and sales by the Company's international subsidiaries, accounted for 55.4%, 57.5% and 53.6% of total revenues for the years ended December 31, 1998, 1997, and 1996, respectively. For the year ended December 31, 1998, 9.1% of the Company's revenues were denominated in currencies other than the U.S. dollar, principally the Japanese Yen. However, this percentage may increase over time as the Company responds to market requirements to sell its products and services in local currencies, such as the Euro. As a result, the Company's operations and the market price of its products may be directly affected by economic and political conditions in the countries where the Company does business. Additional risks inherent in the Company's international business activities include currency fluctuations, unexpected changes in regulatory requirements, tariffs and other trade barriers. The Company expects that international sales will continue to constitute a significant portion of total revenues.

The Company derives its revenues primarily from the sale and licensing of its products and, to a lesser extent, from fees associated with training and technical support offered to its customers. Product revenues consist of revenues from sales of transceivers, control modules, routers, network interface devices and development tools and from licenses for network services software products. Revenues from software licensing arrangements have not been significant to date. Service revenues consist of product support (including software post-contract support services) and training. The Company recognizes revenue from product sales at the time of shipment to the customer. Estimated reserves for warranty costs as well as for sales returns and allowances related to anticipated return of products sold to distributors with limited rights of return, which have not been material to the Company's financial results, are recorded at the time of sale. Revenue from software sales is recognized upon shipment of the software if there are no significant post-delivery obligations and if collection is probable. The Company generally has not had any significant post-delivery obligations associated with the sale of its products. Service revenues are generally recognized as the services are performed.

The Company has experienced operating losses in all prior fiscal years and for the year ended December 31, 1998. During this period, the Company has made significant investments in product development to implement open control networks. Such development projects included development of transceivers, control modules, routers, network interface devices, network management software and the LonPoint System. Furthermore, because the Company's strategy is significantly dependent upon achieving broad adoption of its LONWORKS technology across many industries worldwide, the Company has incurred significant selling and marketing expense promoting its products. The Company currently believes it is unlikely that its future rate of growth of product development, sales and marketing expenses will fall below historical levels. Additionally, the Company believes that it has priced its products at competitive levels to ensure broad adoption of LONWORKS technology. The Company continues to invest significantly in product development, sales and marketing, and to the extent such expenditures do not result in significant increases in revenues, the Company will continue to incur operating losses for the foreseeable future and the Company's business, operating results and financial condition will be materially and adversely affected.

The Company has experienced, and expects to continue to experience, significant variability in its quarterly and annual results due to a number of factors, many of which are outside of the Company's control. The Company believes that one of the factors in such variability is the fluctuation in the rates at which OEMs purchase the Company's products and services, which is impacted by OEMs' own business cycles. Another factor in such variability is the timely introduction of new products. From time to time, the introduction of new products by the Company has been delayed beyond the Company's projected shipping date. In each instance, such delays have resulted in increased costs and delayed revenues. Because future revenues are dependent on the timely introduction of new product offerings, any such future delays could have a material adverse effect on the Company's business, operating results and financial condition. The Company's expense levels are based, in significant part, on the Company's expectations of future revenues. Consequently, if revenue levels are below expectations, expense levels could be disproportionately high as a percentage of total revenues, and operating results would be immediately and adversely affected. The Company has failed to meet its expectations of

future revenues in the past. In addition, the growth of the Company's revenues has been adversely affected by declines in sales of existing products over time.

Results of Operations

The following table sets forth, for the periods indicated, the percentage of total revenues represented by each item in the Company's Consolidated Statement of Operations:

	Year Ended December 31,		
	<u>1998</u>	<u>1997</u>	<u>1996</u>
Revenues:			
Product	90.6%	87.1%	86.3%
Service.....	<u>9.4</u>	<u>12.9</u>	<u>13.7</u>
Total revenues.....	100.0	100.0	100.0
Cost of revenues:			
Cost of product.....	39.7	41.6	44.8
Cost of service.....	<u>5.7</u>	<u>6.4</u>	<u>4.8</u>
Total cost of revenues.....	<u>45.4</u>	<u>48.0</u>	<u>49.6</u>
Gross profit.....	<u>54.6</u>	<u>52.0</u>	<u>50.4</u>
Operating expenses:			
Product development.....	23.5	25.1	31.4
Sales and marketing	38.9	42.9	48.3
General and administrative.....	<u>12.8</u>	<u>14.1</u>	<u>16.3</u>
Total operating expenses	<u>75.2</u>	<u>82.1</u>	<u>96.0</u>
Loss from operations	<u>(20.6)</u>	<u>(30.1)</u>	<u>(45.6)</u>
Interest and other income, net	2.9	1.7	1.6
Loss before provision for income taxes	(17.7)	(28.4)	(44.0)
Provision for income taxes.....	<u>0.5</u>	<u>0.6</u>	<u>0.7</u>
Net loss	<u>(18.2)%</u>	<u>(29.0)%</u>	<u>(44.7)%</u>

Comparison of Years Ended December 31, 1998 and 1997

Revenues

Total revenues for the year ended December 31, 1998 grew to \$32.2 million from \$28.3 million in 1997. One customer, EBV, the sole independent distributor of the Company's products in Europe since December 1997, accounted for 22.6% and 10.9% of total revenues for the years ended December 31, 1998 and 1997, respectively.

Product. Product revenues for the year ended December 31, 1998 grew to \$29.2 million from \$24.7 million in 1997. The 18.2% increase in product revenues between the years was primarily a result of increasing sales of control and connectivity products partially offset by the decrease in sales for network services and development tools products.

Service. Service revenues for the year ended December 31, 1998 decreased to \$3.0 million from \$3.6 million in 1997. The 16.5% decrease in service revenues between the years was due to fewer participants attending the training courses offered by the Company and reduced customer support revenues due to a change in product offerings.

Cost of Revenues

Cost of product. Cost of product revenues consist of costs associated with the purchase of components and subassemblies, as well as allocated labor, overhead and manufacturing variances associated with the packaging, preparation and shipment of products. Cost of product revenues for the year ended December 31, 1998 increased to \$12.8 million from \$11.8 million in 1997, an increase of 8.7%, representing product gross margins of 56.2% and 52.3%, respectively. The increase in product gross margin percentages for the annual periods was primarily due to cost reductions for the Company's higher volume control and connectivity products.

Cost of service. Cost of service revenues consist of employee-related costs as well as direct costs incurred in providing training and customer support services. Cost of service revenues for the years ended December 31, 1998 and 1997 were \$1.8 million, representing service gross margins of 39.6% and 50.2%, respectively. The decrease in service gross margin percentage in 1998 compared to 1997 was primarily due to the decline in service revenues.

Operating Expenses

Product development. Product development expenses consist primarily of payroll and related expenses, expensed material and facility costs associated with the development of new technologies and products. Product development expenses for the year ended

December 31, 1998 increased to \$7.6 million from \$7.1 million in the same period of 1997, representing 23.5% and 25.1%, respectively, of total revenues. The dollar amount increase was primarily the result of increased salaries and other costs related to the hiring of additional engineering personnel to support the development of new and existing products.

Sales and marketing. Sales and marketing expenses consist primarily of payroll and related expenses including commissions to sales personnel, travel and entertainment, advertising and product promotion and facilities costs associated with the Company's sales and support offices. Sales and marketing expenses for the year ended December 31, 1998 increased to \$12.5 million from \$12.1 million in 1997, representing 38.9% and 42.9%, respectively, of total revenues. The decrease in sales and marketing expense as a percentage of total revenues was primarily due to the larger revenue base in 1998.

General and administrative. General and administrative expenses consist primarily of payroll and related expenses for executive, accounting and administrative personnel, insurance, professional fees and other general corporate expenses. General and administrative expenses for the year ended December 31, 1998 increased to \$4.1 million from \$4.0 million from the same period of 1997, representing 12.8% and 14.1%, respectively, of total revenues. The decrease in general and administrative expense as a percentage of total revenues was primarily due to the larger revenue base in 1998.

Interest and other income, net

Interest and other income, net primarily reflects interest earned by the Company on its cash and short-term investment balances. Interest and other income, net for the year ended 1998 increased to \$945,000 from \$497,000 in 1997. The increase in 1998 was primarily due to the higher cash and short-term investments balances generated in the third quarter of 1998 when the Company received net proceeds of \$31.7 million from its initial public offering.

Provision for income taxes

Income taxes consist of income taxes related to certain of the Company's foreign subsidiaries. Income taxes were \$159,000 and \$189,000 for the years ended December 31, 1998 and 1997, respectively.

Comparison of Years Ended December 31, 1997 and 1996

Revenues

Total revenues for fiscal 1997 and 1996 were \$28.3 million and \$24.0 million, respectively, representing an increase of 18.0%. EBV accounted for 10.9% of total revenues in fiscal 1997. In 1996, no single customer accounted for 10% or more of total revenues.

Product. Product revenues for fiscal 1997 and 1996 were \$24.7 million and \$20.7 million, respectively, representing an increase of 19.1%. Product revenues as a percentage of total revenues were 87.1% and 86.3% for fiscal 1997 and 1996, respectively. The increase in 1997 as compared to 1996 was due to the market's growing acceptance of the Company's control and connectivity products which increased by \$4.4 million and an expansion of the Company's product offerings, particularly its network services products.

Service. Service revenues for fiscal 1997 and 1996 were \$3.6 million and \$3.3 million, respectively, representing an increase of 10.8%. Service revenues as a percentage of total revenues were 12.9% and 13.7% for fiscal 1997 and 1996, respectively. The increase in 1997 service revenues as compared to 1996 reflects increased customer support revenues as a result of the increased installed base of the Company's products.

Cost of Revenues

Cost of product. Cost of product revenues for fiscal 1997 and 1996 were \$11.8 million and \$10.8 million, respectively, representing product gross margins of 52.3% and 48.0%, respectively. The increases in dollar amounts were due primarily to the additional product costs associated with increased revenue volumes. The increase in product gross margin in 1997 as compared to 1996 was due primarily to decreased operations spending as a percentage of revenue related to flat spending levels and a decrease in manufacturing variances of \$315,000.

Cost of service. Cost of service revenues for fiscal 1997 and 1996 were \$1.8 million and \$1.1 million, respectively, representing service gross margins of 50.2% and 65.2%, respectively. The increase in dollar amount in fiscal 1997 as compared to 1996 was primarily the result of an increase in the number of customer support and training personnel. The decrease in service gross margin in 1997 as compared to 1996 was due primarily to higher cost of service growth compared to service revenue growth.

Operating Expenses

Product development. Product development expenses for fiscal 1997 and 1996 were \$7.1 million and \$7.5 million, respectively, representing 25.1% and 31.4% of total revenues, respectively. The decrease in product development expenses in 1997 as compared to

1996 was due primarily to the transition of Company personnel from product development to the direct support of the Company's existing customers.

Sales and marketing. Sales and marketing expenses for fiscal 1997 and 1996 were \$12.1 million and \$11.6 million, respectively, representing 42.9% and 48.3% of total revenues, respectively. The dollar amount increase was primarily due to personnel related expenses. The Company's expenses in international sales offices in 1997 were lower than 1996 primarily due to an overall strengthening of the U.S. dollar against most of the functional currencies used in the international sales office operations.

General and administrative. General and administrative expenses for fiscal 1997 and 1996 were \$4.0 million and \$3.9 million, respectively, representing 14.1% and 16.3% of total revenues, respectively. The decrease in percentage of total revenues in 1997 compared to 1996 was due to relatively similar spending levels spread over a larger revenue base.

Interest and other income, net

Interest and other income, net for fiscal 1997 and 1996 was \$497,000 and \$373,000, respectively, representing 1.7% and 1.6% of total revenues, respectively. The higher interest income during 1996 was partially offset by foreign transaction losses primarily related to the fluctuations of the U.S. dollar against the Japanese Yen. The decrease in interest income during 1997 was due to lower cash and short-term investment balances.

Provision for income taxes

Income taxes for 1997 and 1996, which consists of income taxes related to certain of the Company's foreign subsidiaries, were \$189,000 and \$152,000, respectively.

Liquidity and Capital Resources

Since its inception, the Company has financed its operations and met its capital expenditure requirements primarily from the sale of Preferred Stock and Common Stock. From inception through December 31, 1998, the Company had raised \$127.2 million from the sale of Preferred Stock and Common Stock.

In July 1998, the Company consummated an initial public offering of 5,000,000 shares of its Common Stock at a price to the public of \$7.00 per share. The net proceeds to the Company from the offering were approximately \$31.7 million. Concurrent with the closing of the initial public offering, 7,887,381 shares of convertible preferred stock were converted into an equivalent number of shares of common stock. The net proceeds received by the Company upon the consummation of such offering were invested in short-term, investment-grade, interest-bearing instruments.

As of December 31, 1998, the Company had working capital, defined as current assets less current liabilities, of \$33.7 million, which was an increase of approximately \$24.8 million over December 31, 1997. The increase was primarily due to the net proceeds received from the initial public offering in July 1998.

As of December 31, 1998, the Company had cash, cash equivalents and short-term investments of \$29.1 million. Net cash used in operating activities was \$9.2 million and \$9.5 million for the years ended December 31, 1998, and 1997, respectively. Cash used in operating activities in 1998 was principally the result of the net loss, increases in accounts receivable, inventories and other current assets, a decrease in deferred revenue, and a partial offset with depreciation. Cash used in operating activities in 1997 was principally the result of the net loss, increases in accounts receivable and inventories, a decrease in deferred revenue, and a partial offset with depreciation and increases in accounts payable and accrued liabilities.

Net cash used in investing activities was \$16.8 million and \$3.6 million for the years ended December 31, 1998 and 1997, respectively. These amounts reflect the purchases of short-term investments with the proceeds received from the Company's initial public offering in July 1998 and through the issuance of Preferred Stock in May 1997. In addition, the Company had capital expenditures in 1998 related to investments in a new enterprise resource planning system and other equipment needs as a result of its growth.

The Company believes that its existing available cash, cash equivalents and short-term investments will satisfy the Company's projected working capital and other cash requirements for at least the next twelve months. However, there can be no assurance that the Company will not require additional financing within this period or that any such financing will be available to the Company in the amounts or at the times required by the Company, or on acceptable terms, if at all. The Company has terminated its revolving line of credit agreement with a bank, which would have expired in May 1999. The failure of the Company to obtain additional financing, when and if necessary, could have a material adverse effect on the Company's business, operating results and financial condition.

Year 2000 Compliance

The information presented below related to Year 2000 compliance contains forward-looking statements that are subject to risks and uncertainties. The Company's actual results may differ significantly from the results discussed below and elsewhere in this Form 10-K regarding Year 2000 compliance.

Year 2000

Computer programs that are written using two digits rather than four to define the applicable year, may have date-sensitive software and, for instance, may recognize a date using 00 as the year 1900 rather than the year 2000 ("Date Code Dependency"). Additional computer problems are possible related to leap year calculations in the year 2000. Either problem could result in a system failure or miscalculations causing disruptions of operations, including, among other things, a temporary inability to process transactions, send invoices, or engage in normal business activities.

State of Readiness

Echelon has formed a cross-functional team (the "Y2K Team") including Information Services ("IS"), Operations, Product Marketing, Product Development and Administration to evaluate and address the compliance of its products, internal systems, and key suppliers related to Date Code Dependencies. The Y2K Team is in the process of documenting the results of these evaluations and expects all such evaluations to be completed by June 1999 with any required remediation to be completed by September 1999.

Echelon Products: All products that were available for sale beginning with Echelon's January 1997 price list, and all subsequent versions of the price list are being analyzed and tested to verify conformity with the Company's selected test for Date Code Dependencies. All Echelon product tests are being performed according to the definition set forth in the British Standards Institution definition. In some instances, Echelon's compliance testing will depend upon compliance certification provided by third party component vendors.

Internal Systems: IS is responsible for all corporate systems and servers (including operating systems) and for desktop systems. The facilities located in Palo Alto, California (the Company's corporate headquarters) are being evaluated according to the model of the California State Year 2000 Embedded System Plan. There is increased risk with the Company's international sales and marketing office locations due to the individual infrastructures and varying rates of year 2000 compliance in the hosting countries. Echelon is evaluating each international location on a case-by-case basis. In January 1999, the Company replaced its former enterprise resource planning system with a new system which does not have Date Code Dependencies.

Suppliers: All of the Company's key suppliers have indicated that they do not anticipate Date Code Dependency problems. Echelon is continuing to evaluate non-key suppliers for Date Code Dependency issues.

Customers: All of the Company's current customers are being mailed quarterly letters updating them as to Date Code Dependencies with regard to Echelon products. The Company's web site is also updated quarterly with this information.

Costs and Risks Associated with Date Code Dependencies

With the exception of the new enterprise resource planning system which had capitalized costs of approximately \$1.2 million, additional costs to test and administer the Year 2000 compliance have been done internally without any additional outside contracted services. To date, the Company has concluded that additional costs to test, administer, and mitigate Year 2000 issues will not be material. However, failure of the Company's products to operate properly with regard to the Year 2000 and thereafter could require the Company to incur unanticipated expenses to remedy any problems. Date Code Dependency issues may also arise with respect to any modifications made to the Company's products by a party other than the Company or from the combination or use of the Company's products with any other software programs or hardware devices not provided by the Company, and therefore may result in unforeseen Year 2000 compliance problems for some of the Company's customers, which could result in reduced customer orders or liability to the Company. Moreover, the Company's insurance policies contain Year 2000 exclusion provisions. The Company also faces risks to the extent that suppliers of products, services and systems purchased by the Company have business systems or products that have a Date Code Dependency. In addition, some of the Company's customers or vendors could experience Date Code Dependency problems that could result in disruptions of their internal operations that could delay their purchases of the Company's products. Any of these factors could result in a material adverse effect on the Company's business, operating results and financial condition. Management expects to make contingency plans as necessary.

New Accounting Standards

In March 1998, the AICPA issued SOP 98-1, "Accounting for the Costs of Computer Software Developed or Obtained for Internal Use". SOP 98-1 is effective for the Company's fiscal year beginning January 1, 1999 and provides guidance on the capitalization of software for internal use. Management believes the adoption of SOP 98-1 will not have a material effect on the Company's financial statements.

In April 1998, the AICPA issued SOP 98-5 "Reporting the Costs of Start-up Activities". SOP 98-5 is effective for the Company's fiscal year beginning January 1, 1999. SOP 98-5 provides guidance on the financial reporting of start-up costs and organization costs and requires such costs to be expensed as incurred. Management believes the adoption of SOP 98-5 will not have a material effect on the Company's financial statements.

In June 1998, the Financial Accounting Standards Board issued SFAS No. 133, "Accounting for Derivative Investments and Hedging Activities," which establishes standards for the accounting for derivative transactions and derivative portion of certain other contracts. SFAS No. 133 will become effective for the Company's year beginning January 1, 2000. Management believes that SFAS No. 133 will not have a material effect on the Company's financial statements.

FACTORS THAT MAY AFFECT FUTURE RESULTS OF OPERATIONS

HISTORY OF LOSSES; ACCUMULATED DEFICIT; ANTICIPATED CONTINUING LOSSES; UNCERTAINTY OF FUTURE OPERATING RESULTS

The Company has incurred net losses each year since its inception. At December 31, 1998, the Company had an accumulated deficit of \$90.5 million. The Company has invested and continues to invest significant financial resources in product development, marketing and sales, and to the extent such expenditures do not result in significant increases in revenues, the Company's business, operating results and financial condition will be materially and adversely affected. Due to the limited history and undetermined market acceptance of many of the Company's products and technologies, the rapidly evolving nature of the Company's business and markets, potential changes in voluntary product standards that significantly influence many of the markets for the Company's products, the high level of competition in the industries in which the Company operates and the other factors described elsewhere in this document, there can be no assurance that the Company's investment in these areas will result in increases in revenues or that any revenue growth that is achieved can be sustained. Any revenue growth that the Company has achieved or may achieve may not be indicative of future operating results. In addition, the Company's history of losses make future operating results difficult to predict. The Company and its prospects must be considered in light of the risks, costs and difficulties frequently encountered by emerging companies. As a result, there can be no assurance that the Company will be profitable in any future period. Future operating results will depend on many factors, including the growth of the markets for the Company's products, the acceptance of the Company's products, the level of competition, the ability of the Company to develop and market new products, and general economic conditions. In view of the uncertainties identified herein, the Company believes that period-to-period comparisons of financial results are not necessarily meaningful and should not be relied upon as an indication of future performance. As of December 31, 1998, the Company had net operating loss carryforwards for Federal and state income tax reporting purposes of approximately \$80.1 million and \$5.0 million, respectively, which expire at various dates through 2018. In addition, as of December 31, 1998, the Company had tax credit carryforwards of approximately \$4.1 million, which expire at various dates through 2018. The Internal Revenue Code of 1986, as amended, contains provisions that may limit the use in any future period of net operating loss and credit carryforwards upon the occurrence of certain events, including a significant change in ownership interests. The Company had deferred tax assets, including its net operating loss carryforwards and tax credits, totaling approximately \$36.1 million as of December 31, 1998. A valuation allowance has been recorded for the entire deferred tax asset as a result of uncertainties regarding the realization of the asset balance, the history of losses and the variability of operating results.

FLUCTUATIONS IN OPERATING RESULTS

The Company has experienced, and expects to continue to experience, significant variability in its quarterly and annual results, as a result of a number of factors, many of which are outside of the Company's control. The Company believes that such variability is primarily due to the fluctuations in the rates at which OEMs purchase the Company's products and services, the OEMs' own business cycles, the timely introduction of new products, any downturns in any customer's or potential customer's business, the Company's ability to anticipate and effectively adapt to developing markets and rapidly changing or new technologies and distribution channels, increased competition, market acceptance of the Company's products, product life cycles, order delays or cancellations, changes in the mix of products and services sold by the Company, shipment and payment schedules, changes in pricing policy by the Company or its competitors, changes in product distribution, product ratings by industry analysts and endorsement of competing products by industry groups. Declines in general economic conditions could also precipitate significant reductions in capital spending, which could, in turn, affect orders for the Company's products. The Company's expense levels are based, in significant part, on expectations of future revenues. Consequently, if revenue levels are below expectations, expense levels could be disproportionately high as a percentage of total revenues, and operating results would be immediately and adversely affected. The Company has failed to meet its expectations of future revenues in the past. As a result of these and other factors, the Company believes that its revenues and operating results are difficult to predict and are subject to fluctuations from period to period, and that period-to-period comparisons of its results of operations are not meaningful and should not be relied upon as indications of future performance.

DEPENDENCE ON OEMS AND DISTRIBUTION CHANNELS

To date, substantially all of the Company's sales of its products have been to OEMs. The rate at which the Company's products are used in control networks is primarily subject to product and marketing decisions made by OEMs. The Company believes that since OEMs in certain industries receive a large portion of their revenues from sales of products and services to their installed base, such OEMs have tended to moderate the rate at which they incorporate LONWORKS technology into their products. The Company has

attempted to motivate OEMs, as well as systems integrators and owners of control systems, to effect a more rapid transition to LONWORKS technology. Furthermore, OEMs that manufacture and promote products and technologies that compete or may compete with the Company may be particularly reluctant to employ the Company's products and technologies to any significant extent, if at all. There can be no assurance that the Company will be able to improve the current rate of acceptance or usage of its products by OEMs and others, or that such usage will not decrease over time. The failure to increase acceptance or usage of the Company's products, or any decrease in usage of its products, would have a material adverse effect on the business, operating results and financial condition of the Company.

Currently, a significant portion of the Company's revenues are derived from sales by EBV, the sole independent distributor of the Company's products to OEMs in Europe since December 1997. EBV accounted for 22.6% and 10.9% of the Company's total revenues for the years ended December 31, 1998 and 1997 respectively. The Company's agreement with EBV will expire in December 1999. In addition, as part of its distribution strategy, the Company intends to develop distribution arrangements with systems integrators. In particular, the Company expects that a significant portion of its future revenues will be derived from sales by such systems integrators. Any failure by EBV or any other existing or future distributor to dedicate sufficient resources and efforts to the marketing and selling of the Company's products, or to generate significant revenues for the Company, could have a material adverse effect on the Company's business, operating results and financial condition. Also, the failure of the Company to develop new distribution channels, to maintain the EBV arrangement or any other distribution channels, or to renew the EBV arrangement on a timely basis, would result in reduced or delayed revenues, increased operating expenses and loss of customer goodwill, any of which could have a material adverse effect on the business, operating results and financial condition of the Company.

DEPENDENCE ON KEY MANUFACTURERS

The Neuron Chip is an important component used by the Company's customers in control network nodes. In addition, the Neuron Chip is an important device used in many of the Company's products. Neuron Chips are manufactured and distributed by both Motorola and Toshiba. The Company has entered into licensing agreements with each of Motorola and Toshiba. The agreements, among other things, grant Motorola and Toshiba the worldwide right to manufacture and distribute Neuron Chips using technology licensed from the Company and require the Company to provide support and unspecified updates to the licensed technology over the terms of the agreements. The Motorola and Toshiba agreements expire in January 2001 and January 2000 respectively, unless renewed. Motorola has announced that it will discontinue distribution of Neuron Chips after January 31, 2001. However, both Motorola and Toshiba have the right to terminate the agreements at any time. While the Company developed the first version of the Neuron Chip, Motorola and Toshiba subsequently developed improved, lower-cost versions of the Neuron Chip that are presently utilized in products developed and sold by the Company and its customers. The Company currently has no other source of supply for Neuron Chips and has neither the resources nor the skills to replace either Motorola or Toshiba as a manufacturer of Neuron Chips. The Company is attempting to license a second source for design, development and supply of the Neuron Chip as a replacement for Motorola. Both Motorola and Toshiba have played, and Toshiba is expected to continue to play, a key role in the development and marketing of LONWORKS technology. The loss of Toshiba as a supplier of the Neuron Chip, or the failure of the Company to license a second supplier of the Neuron Chip to replace Motorola in a timely manner and on commercially reasonable terms, could have a material adverse effect on the business, operating results and financial condition of the Company. There can be no assurance that the Company would be able to locate an alternate source for the design, manufacture or distribution of Neuron Chips.

The Company's future success will also depend, in significant part, on its ability to successfully manufacture its products cost-effectively and in sufficient volumes. For certain key products, the Company utilizes outsource manufacturers including GET and muRata. These outsource manufacturers procure material and assemble, test and inspect the final products to the Company's specifications. Such a strategy involves certain risks, including the potential absence of adequate capacity and reduced control over delivery schedules, product availability, manufacturing yields, quality and costs. In addition, several key components are currently purchased only from sole or limited sources. Any interruption in the supply of these products or components, or the inability of the Company to procure these products or components from alternate sources at acceptable prices and within a reasonable time, could have a material adverse effect upon the Company's business, operating results and financial condition.

COMPETITION

Competition in the Company's markets is intense and involves rapidly changing technologies, evolving industry standards, frequent new product introductions and rapid changes in customer requirements. To maintain and improve its competitive position, the Company must continue to develop and introduce, on a timely and cost-effective basis, new products, features and services that keep pace with the evolving needs of its customers. The principal competitive factors affecting the markets for the Company's control network products are customer service and support, product reputation, quality, performance, price and product features such as adaptability, scalability, ability to integrate with other products, functionality and ease of use. The Company believes it has in the past generally competed favorably with offerings of its competitors on the basis of these factors. However, there can be no assurance that the Company will continue to be able to compete effectively based on these or any other competitive factors in the future.

In each of its markets, the Company competes with a wide array of manufacturers, vendors, strategic alliances, systems developers and other businesses. The Company's competitors include some of the largest companies in the electronics industry, such as Siemens in the building and industrial automation industries and Allen-Bradley and Schneider in the industrial automation industry. Many of the Company's competitors, alone or together with their trade associations and partners, have longer operating histories,

significantly greater financial, technical, marketing, service and other resources, significantly greater name recognition and broader product offerings. As a result, such competitors may be able to devote greater resources to the development, marketing and sale of their products, and may be able to respond more quickly to changes in customer requirements or product technology. In addition, those competitors that manufacture and promote closed, proprietary control systems may enjoy a captive customer base dependent on such competitors for service, maintenance, upgrades and enhancements. Accordingly, there can be no assurance that the Company will be able to compete successfully with existing or new competitors, or that competition will not have a material adverse effect on the business, operating results or financial condition of the Company.

Many of the Company's current and prospective competitors are dedicated to promoting closed or proprietary systems, technologies, software and network protocols or product standards that differ from, or are incompatible with, those of the Company. In some cases, companies have established associations or cooperative relationships to enhance the competitiveness and popularity of their products, or to promote such different or incompatible technologies, protocols and standards. For example, in the building automation market, the Company faces widespread reluctance by vendors of traditional closed or proprietary control systems (who enjoy a captive market for servicing and replacing equipment) to utilize the Company's interoperable technologies, as well as strong competition by large trade associations that promote alternative technologies and standards in their native countries, such as the BatiBus Club International in France and the European Installation Bus Association in Germany (each of which has over 100 members and licensees). Other examples include the CEBus Industry Council, which is the proponent of an alternative protocol to the Company's LonTalk protocol for use in the home automation industry, and a group comprised of Asea Brown Boveri, ADtranz AB, Siemens, GEC Alstrom and other manufacturers that support an alternative rail transportation protocol to the Company's LonTalk protocol. There can be no assurance that the Company's technologies, protocols or standards will be successful in any of its markets, or that the Company will be able to compete with new or enhanced products or standards introduced by existing or future competitors. Any increase in competition or failure by the Company to effectively compete with new or enhanced products or standards could result in fewer customer orders, price reductions, reduced order size, reduced operating margins and loss of market share, any of which could have a material adverse effect on the business, operating results or financial condition of the Company.

LONWORKS technology is open, meaning that many of the Company's key technology patents are broadly licensed without royalties or license fees. As a result, the Company's customers are capable of developing products that compete with some of the Company's products. Because some of the Company's customers are OEMs that develop and market their own control systems, these customers in particular could develop competing products based on the Company's open technology. This could decrease the market for the Company's products, increase competition, and have a material adverse effect on the Company's business, operating results and financial condition.

VOLATILITY OF STOCK PRICE

The price of the Company's Common Stock has been, and from time to time, may be, volatile. The stock price is subject to wide fluctuations in response to quarterly variations in operating results, announcements of technological innovations or new products by the Company or its competitors, changes in financial estimates by securities analysts, or other events or factors. In addition, there has been significant volatility in the market price of securities of technology companies (especially those in new or emerging industries, such as the Company), which volatility is often unrelated to the operating performance of particular companies. In the future, the Company's operating results could fall below analysts' expectations, which would adversely affect the market price of the Company's Common Stock. In the past, following a period of volatility in the market price of a company's securities, securities class action lawsuits have often been instituted against companies. If brought against the Company, regardless of outcome, the costs and diversion of management resources of defending such litigation could have a material adverse effect on its business, operating results and financial condition.

DEPENDENCE ON KEY PERSONNEL

The Company's performance is substantially dependent on the performance of its executive officers and key employees. The loss of the services of any of the Company's executive officers or key employees could have a material adverse effect on the business, operating results and financial condition of the Company. The Company is particularly dependent upon its Chief Executive Officer, as well as its technical personnel, due to the specialized technical nature of the Company's business. The Company's future success will depend on its ability to attract, integrate, motivate and retain qualified technical, sales, operations and managerial personnel. There is intense competition for qualified personnel in the areas of the Company's activities, and there can be no assurance that the Company will be able to continue to attract and retain qualified executive officers and key personnel necessary for the development and success of its business. If the Company is unable to hire personnel on a timely basis in the future, the Company's business, operating results and financial condition will be materially and adversely affected. In addition, the departure or replacement of key personnel could be disruptive, lead to additional departures and therefore have a material adverse effect on the Company's business, operating results and financial condition. The Company maintains and is the beneficiary of life insurance policies in the amount of \$2.5 million covering each of M. Kenneth Oshman, its Chief Executive Officer, Beatrice Yormark, its Vice President of Sales and Marketing, and Oliver R. Stanfield, its Chief Financial Officer. There can be no assurance that such proceeds would be sufficient to compensate the Company in the event of the death of Mr. Oshman, Ms. Yormark or Mr. Stanfield.

NEW PRODUCTS AND RAPID TECHNOLOGICAL CHANGE

Customer requirements for control network products can change as a result of innovations or changes within the building, industrial, transportation, home and other industries. For example, the adoption of new or different standards within industry segments may give rise to new customer requirements, which may or may not be compatible with the Company's current or future product offerings. The Company's future success depends in large part on its ability to continue to enhance existing products, lower product cost and develop new products that maintain technological competitiveness. There can be no assurance that the Company will be successful in modifying its products and services to address these requirements and standards. For example, certain of the Company's competitors may develop competing technologies based on Internet protocols that may have advantages over the Company's products in remote connection. If the Company is unable, for technological or other reasons, to develop new products or enhancements of existing products in a timely manner to respond to changing market conditions, competitive factors and customer requirements, the Company's business, operating results and financial condition would be materially adversely affected.

From time to time, the introduction of new products by the Company has been delayed beyond the Company's projected shipping date for such products. In each instance, such delays have resulted in increased costs and delayed revenues. Because future revenues are dependent on the timely introduction of new product offerings, any such future delays could have a material adverse effect on the Company's business, operating results and financial condition.

MARKET ACCEPTANCE OF INTEROPERABILITY

The future operating success of the Company will depend, in significant part, on the successful development of interoperable products by the Company and OEMs, and the acceptance of interoperable products by systems integrators and end-users. When products or subsystems from multiple vendors can be integrated into a control system without the need to develop custom hardware or software, they are "interoperable". The Company has expended considerable resources to develop, market and sell interoperable products, and has made such products a cornerstone of its sales and marketing strategy. The Company has widely promoted interoperable products as offering benefits such as lower life-cycle costs and improved flexibility to owners and users of control networks. However, there can be no assurance that OEMs who manufacture and market closed systems will accept, promote or employ interoperable products, since doing so may expose such OEMs' businesses to increased competition. In addition, there can be no assurance that OEMs will, in fact, successfully develop interoperable products, or that OEMs' interoperable products will be accepted by their customers. The failure of OEMs to develop interoperable products, or the failure of interoperable products to achieve market acceptance, would have a material adverse effect on the business, operating results and financial condition of the Company.

INTERNATIONAL OPERATIONS; CURRENCY FLUCTUATIONS

The Company's sales and marketing operations are located in nine countries. Revenues from international sales, which include both export sales and sales by international subsidiaries, accounted for approximately 55.4%, 57.5%, and 53.6% of the Company's total revenues during the years ended December 31, 1998, 1997 and 1996, respectively. The Company's operations and the market price of its products may be directly affected by economic and political conditions in the countries where the Company does business. In addition, there can be no assurance that the Company will be able to maintain or increase the international demand for its products. Additional risks inherent in the Company's international business activities generally include currency fluctuations, unexpected changes in regulatory requirements, tariffs and other trade barriers, costs of localizing products for foreign countries, lack of acceptance of non-local products in foreign countries, longer accounts receivable payment cycles, difficulties in managing international operations, potentially adverse tax consequences, including restrictions on repatriation of earnings, and the burdens of complying with a wide variety of foreign laws. Differing vacation and holiday patterns in other countries, particularly in Europe, may also affect the amount of business transacted by the Company in other countries in any given quarter, the timing of the Company's revenues and its ability to forecast its projected operating results for such quarter. For the year ended December 31, 1998, approximately 9.1% of the Company's revenues were conducted in currencies other than the U.S. dollar, principally the Japanese Yen. Fluctuations in the value of currencies in which the Company conducts its business relative to the U.S. dollar could cause currency translation adjustments. The Company has experienced and in the future may continue to experience an increase in currency translation adjustments relative to currencies of Asia Pacific countries, as well as order delays, cancellations and pricing pressure in those countries as a result of general economic conditions in that region. The introduction of the Euro as the standard currency in participating European countries may also impact the ability of the Company to denominate sales transactions in U.S. dollars. To the extent that fewer of the Company's sales in Europe are denominated in U.S. dollars, the Company may experience an increase in currency translation adjustments, particularly as a result of general economic conditions in Europe as a whole. The Company does not currently engage in currency hedging transactions or otherwise cover its foreign currency exposure. There can be no assurance that such factors will not have a material adverse effect on international revenues and, consequently, the Company's business, operating results and financial condition.

LENGTHY SALES CYCLE

The sales cycle between initial customer contact and execution of a contract or license agreement with a customer can vary widely. OEMs typically conduct extensive and lengthy product evaluations before making initial purchases of the Company's products. Subsequent purchases of the Company's products may be delayed by prolonged product development and introduction periods for OEMs. Attendant delays in the Company's sales cycle can result from, among other things, changes in customers' budgets or in the

priority assigned to control network development and to educating customers as to the potential applications of and cost savings associated with the Company's products. The Company generally has little or no control over these factors, which may cause a potential customer to favor a competitor's products, or to delay or forgo purchases altogether. Also, there can be long sales cycles between the selection of the Company's products for use by a systems integrator, and the purchase of such products by the systems integrator. As a result of the foregoing, the Company's ability to forecast the timing and amount of specific sales is limited, and the delay or failure to complete transactions could have a material adverse effect on the Company's business, operating results and financial condition and cause the Company's operating results to vary significantly from period to period.

LIMITED PROTECTION OF INTELLECTUAL PROPERTY RIGHTS

The Company's success depends significantly upon its intellectual property rights. The Company relies on a combination of patent, copyright, trademark and trade secret laws, non-disclosure agreements and other contractual provisions to establish, maintain and protect its intellectual property rights, all of which afford only limited protection. The Company has 71 issued U.S. patents, 18 pending U.S. patent applications, and various foreign counterparts. There can be no assurance that patents will issue from these pending applications or from any future applications or that, if issued, any claims allowed will be sufficiently broad to protect the Company's technology. Failure of any patents to protect the Company's technology, may make it easier for the Company's competitors to offer equivalent or superior technology. The Company has registered or applied for registration for certain trademarks, and will continue to evaluate the registration of additional trademarks as appropriate. Any failure by the Company to properly register or maintain its trademarks or to otherwise take all necessary steps to protect its trademarks may diminish the value associated with the Company's trademarks. In addition, any failure by the Company to take all necessary steps to protect its trade secrets or other intellectual property rights may have a material adverse effect on the Company's ability to compete in its markets. Despite the Company's efforts to protect its proprietary rights, unauthorized parties may attempt to copy aspects of the Company's products or services or to obtain and use information that the Company regards as proprietary. There can be no assurance that any patents, trademarks, copyrights or intellectual property rights that have been or may be issued or granted will not be challenged, invalidated or circumvented, or that any rights granted thereunder would provide protection for the Company's proprietary rights. In addition, there can be no assurance that the Company has taken or will take all necessary steps to protect its intellectual property rights. Third parties may also independently develop similar technology without breach of the Company's trade secrets or other proprietary rights. The Company has licensed in the past and may license in the future its key technologies to third parties. In addition, the laws of some foreign countries, including several in which the Company operates or sells its products, do not protect proprietary rights to as great an extent as do the laws of the United States. Certain of the Company's products are licensed under shrink wrap license agreements that are not signed by licensees and therefore may not be binding under the laws of certain jurisdictions.

From time to time, litigation may be necessary to defend and enforce the Company's proprietary rights. Such litigation could result in substantial costs and diversion of management resources and could have a material adverse effect on the Company's business, operating results and financial condition, regardless of the final outcome. Despite the Company's efforts to safeguard and maintain its proprietary rights both in the United States and abroad, there can be no assurance that the Company will be successful in doing so or that the steps taken by the Company in this regard will be adequate to deter infringement, misuse, misappropriation or independent third-party development of the Company's technology or intellectual property rights or to prevent an unauthorized third party from copying or otherwise obtaining and using the Company's products or technology. Any of such events could have a material adverse effect on the Company's business, operating results and financial condition.

RISKS OF PRODUCT DEFECTS OR MISUSE

Products developed, licensed and sold by the Company may contain errors or failures or may be improperly installed or implemented. There can be no assurance that errors or failures will not be found in the Company's products or that, if discovered, the Company will be able to successfully correct such errors or failures in a timely manner or at all. In addition, there can be no assurance that the Company's products will be properly installed or implemented by third parties. The occurrence of errors or failures in the Company's products and applications, or improper installation or implementation of the Company's products, could result in loss of or delay in market acceptance, increased service and warranty costs or payment of compensatory or other damages. In addition, such errors or failures may result in delays of revenue recognition by the Company and diversion of the Company's engineering resources to correct such defects. The Company maintains errors and omissions insurance to cover liability associated with its operations but there can be no assurance that any such insurance will be available or will be sufficient in amount to cover any particular claim. Although the Company's agreements with its customers typically contain provisions intended to limit the Company's exposure to potential claims as well as any liabilities arising from such claims, and may in very limited instances require that the Company be named as an additional insured under the insurance policies carried by some of its customers, such contracts and insurance may not effectively protect the Company against the liabilities and expenses associated with product errors or failures. Accordingly, errors or failures in the Company's products or applications or improper installation or implementation of the Company's products by third parties could have a material adverse effect on the Company's business, operating results and financial condition. In addition, because of the low cost and interoperable nature of the Company's products, LONWORKS technology could be used in a manner for which it was not intended, which could lead to loss of goodwill or material financial losses for the Company, or otherwise have a material adverse effect on the Company's business, operating results and financial condition.

REGULATORY ACTIONS

Many of the Company's products and the industries in which they are used are subject to U.S. and foreign regulation. Government regulatory action could greatly reduce the market for the Company's products. For example, the power line medium (the communications medium used by some of the Company's products) is subject to special regulations in North America, Europe and Japan. These regulations limit the ability of companies in general to use power lines as a communication medium. In addition, some of the Company's competitors have attempted to use regulatory actions to reduce the market opportunity for the Company's products or to increase the market opportunity for the competitors' products. For example, CEMA, a trade association that developed the CEBus protocol, an alternative to the Company's LonTalk protocol for use in home automation applications, has proposed that the FCC adopt a standard for television-cable compatibility that encompasses CEBus. CEMA has also proposed the use of such standard with respect to an FCC rulemaking relating to the commercial availability of navigation devices, such as set-top boxes. The Company has resisted these efforts and will continue to oppose competitors' efforts to use regulation to impede competition in the markets for the Company's products. There can be no assurance that existing or future regulations or regulatory actions would not adversely affect the market for the Company's products or require significant expenditures of management, technical or financial resources, any of which could have a material adverse effect on the Company's business, operating results and financial condition.

VOLUNTARY STANDARDS

Standards bodies, which are formal and informal associations that attempt to set voluntary, non-governmental product standards, are influential in many of the Company's target markets. Some of the Company's competitors have attempted to use voluntary standards to reduce the market opportunity for the Company's products, or to increase the market opportunity for the competitors' products, by lobbying for the adoption of voluntary standards that would exclude or limit the use of the Company's products. The Company participates in many voluntary standards processes both to avoid adoption of exclusionary standards and to promote voluntary standards for the Company's products. However, the Company does not have the resources to participate in all voluntary standards processes that may affect its markets. The adoption of voluntary standards that are incompatible with the Company's products or technology could have a material adverse effect on the Company's business, operating results and financial condition.

CONTROL BY EXISTING STOCKHOLDERS

As of February 28, 1999, the directors and executive officers of the Company, together with certain entities affiliated with them, beneficially own 47.5% of the Company's outstanding Common Stock and Motorola, a principal stockholder of the Company, owns 12.0% of the Company's outstanding Common Stock. Further, pursuant to the terms of the stock purchase agreement under which Motorola initially acquired its shares, Motorola and two other stockholders which combined with Motorola own approximately 16.0% of the Company's outstanding Common Stock have agreed to vote (i) all of their shares in favor of the slate of director nominees recommended by the Board of Directors, and (ii) a number of shares equal to at least that percentage of shares voted by all other stockholders for or against any given matter, as recommended by the Board of Directors (except certain matters relating to certain changes to the Company's charter, liquidations, a sale of the Company or a merger of the Company into another entity), as recommended by a majority of the Board of Directors. As a result, these stockholders would be able to control substantially all matters requiring approval by the stockholders of their Company, including the election of all directors and approval of significant corporate transactions.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate Risk. Echelon's exposure to market risk for changes in interest rates relate primarily to its investment portfolio. Echelon does not use derivative financial instruments in its investment portfolio. All investments are in high-credit quality issuances and, by policy, are limited in the amount of credit exposure to any one issuer. Echelon ensures the safety and preservation of the invested principal funds by investing in safe and high-credit quality securities which includes only marketable securities with active secondary or resale markets to ensure portfolio liquidity.

The table below presents principal amounts and related weighted average interest rates for Echelon's investment portfolio at December 31, 1998. All investments mature, by Company policy, in two years or less.

(in thousands, except average interest rates)

	<u>Carrying Amount</u>	<u>Average Interest Rate</u>
Cash Equivalents:		
U.S. corporate securities	\$ 7,740	5.36 %
Total cash equivalents	<u>7,740</u>	<u>5.36 %</u>
Short-term Investments:		
U.S. corporate securities	16,503	5.60 %
Foreign securities	<u>998</u>	<u>5.03 %</u>
Total short-term investments	<u>17,501</u>	<u>5.57 %</u>
Total investment securities	<u>\$ 25,241</u>	<u>5.50 %</u>

Foreign Currency Exchange Risk. Echelon transacts business in various foreign countries. Its primary foreign currency cash flows are in Japan and Western Europe. Currently, the Company does not employ a foreign currency hedge program utilizing foreign currency exchange contracts as the foreign currency transactions and risks to date have not been significant.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The Financial Statements and Supplementary Data required by this item are set forth at the pages indicated at Item 14(a).

ITEM 9. CHANGE IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

PART III

ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT

Reference is made to the information regarding Directors appearing under the caption "Election of Directors" and "Other Information - Compliance with Section 16 (a) of the Securities Exchange Act of 1934" in the Company's proxy statement to be filed with the Securities and Exchange Commission within 120 days after the end of the Company's fiscal year ended December 31, 1998, which information is incorporated herein by reference; and to the information under the heading "Executive Officers of the Registrant" in Part I hereof.

ITEM 11. EXECUTIVE COMPENSATION

The information under the caption "Executive Compensation" in the Company's proxy statement to be filed with the Securities Exchange Commission within 120 days after the end of the Company's fiscal year ended December 31, 1998, is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The information appearing under the caption "Share Ownership by Principal Stockholders and Management" in the Company's proxy statement to be filed with the Securities Exchange Commission within 120 days after the end of the Company's fiscal year ended December 31, 1998, is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

The information appearing under the caption "Other Information - Certain Transactions" in the Company's proxy statement to be filed with the Securities Exchange Commission within 120 days after the end of the Company's fiscal year ended December 31, 1998, is incorporated by reference.

PART IV

ITEM 14. EXHIBITS, FINANCIAL STATEMENT SCHEDULES AND REPORTS ON FORM 8-K

(a) The following documents are filed as part of this Form:

1. Financial Statements

	<u>Page</u>
Report of Independent Public Accountants	29
Consolidated Balance Sheets	30
Consolidated Statements of Operations.....	31
Consolidated Statements of Stockholders' Equity	32
Consolidated Statements of Cash Flows	33
Notes to Consolidated Financial Statements	34

2. Financial Statement Schedules

Schedule II Valuation and Qualifying Accounts	43
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All other schedules have been omitted because they are not applicable or the required information is included in the Consolidated Financial Statements or Notes thereto.

3. Exhibits

Exhibit

<u>No.</u>	<u>Description of Document</u>
1.1*	Form of Underwriting Agreement.
3.1*	Amended and Restated Certificate of Incorporation of Registrant.
3.2*	Amended and Restated Certificate of Incorporation of Registrant (to be effective upon closing of Offering).
3.3*	Amended and Restated Bylaws of Registrant.
4.1*	Form of Registrant's Common Stock Certificate.
4.2*	Second Amended and Restated Modification Agreement dated May 15, 1997.
5.1*	Opinion of Wilson Sonsini Goodrich & Rosati P.C., regarding the legality of the securities being issued.
10.1*	Form of Indemnification Agreement entered into by Registrant with each of its directors and executive officers.
10.2*	1997 Stock Plan and forms of related agreements.
10.3*	1988 Stock Option Plan and forms of related agreements.
10.4*	Second Amended and Restated Modification Agreement dated May 15, 1997 (included in Exhibit 4.2).
10.5*	Form of International Distributor Agreement.
10.6*	Form of OEM License Agreement.
10.7*	Form of Software License Agreement.
10.8*	International Distributor Agreement between the Company and EBV Elektronik GmbH as of December 1, 1997.
10.9*	1998 Director Option Plan.

21.1* Subsidiaries of the Registrant.

23.1 Consent of Arthur Andersen LLP.

24.1* Power of Attorney.

27.1 Financial Data Schedule (available in EDGAR format only).

* Previously filed.

(b) Reports on Form 8-K

None.

REPORT OF INDEPENDENT PUBLIC ACCOUNTANTS

To Echelon Corporation:

We have audited the accompanying consolidated balance sheets of Echelon Corporation (a Delaware corporation) and subsidiaries as of December 31, 1998 and 1997, and the related consolidated statements of operations, stockholders' equity and cash flows for each of the three years in the period ended December 31, 1998. These financial statements and the schedule referred to below are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Echelon Corporation and subsidiaries as of December 31, 1998 and 1997, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 1998 in conformity with generally accepted accounting principles.

Our audits were made for the purpose of forming an opinion on the basic financial statements taken as a whole. The schedule listed under Item 14(a) is presented for purposes of complying with the Securities and Exchange Commission's rules and is not part of the basic financial statements. This schedule has been subjected to the auditing procedures applied in our audits of the basic financial statements and, in our opinion, fairly states in all material respects the financial data required to be set forth therein in relation to the basic financial statements taken as a whole.

ARTHUR ANDERSEN LLP

San Jose, California
January 18, 1999

ECHELON CORPORATION
CONSOLIDATED BALANCE SHEETS
(in thousands, except share and per share amounts)

	As of December 31,	
	1998	1997
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	\$ 11,552	\$ 4,872
Short-term investments.....	17,501	2,981
Accounts receivable, net of allowances of \$1,182 and \$562, respectively	4,559	3,810
Inventories	3,364	2,444
Other current assets	<u>2,170</u>	<u>1,196</u>
Total current assets	<u>39,146</u>	<u>15,303</u>
PROPERTY AND EQUIPMENT:		
Computer and other equipment.....	8,665	6,816
Furniture and fixtures	1,339	1,323
Leasehold improvements	<u>528</u>	<u>548</u>
	10,532	8,687
Less: Accumulated depreciation and amortization	<u>(7,728)</u>	<u>(7,174)</u>
Net property and equipment.....	<u>2,804</u>	<u>1,513</u>
	<u>\$ 41,950</u>	<u>\$ 16,816</u>
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES:		
Accounts payable.....	\$ 1,787	\$ 2,081
Accrued liabilities.....	2,067	1,988
Current portion of deferred revenues	<u>1,559</u>	<u>2,351</u>
Total current liabilities.....	<u>5,413</u>	<u>6,420</u>
LONG-TERM LIABILITIES:		
Deferred rent, net of current portion	76	246
Deferred revenues, net of current portion	<u>675</u>	<u>1,350</u>
Total long-term liabilities	<u>751</u>	<u>1,596</u>
STOCKHOLDERS' EQUITY:		
Convertible preferred stock, \$.01 par value:		
Authorized—5,000,000 shares in 1998 and 11,000,000 shares in 1997		
Outstanding—(Series B, C, D and E), none in 1998 and 7,887,381 shares in 1997.....	—	79
Common stock, \$.01 par value:		
Authorized—100,000,000 shares in 1998 and 50,000,000 shares in 1997		
Outstanding—32,542,859 and 18,832,430 shares in 1998 and 1997	325	188
Additional paid-in capital	126,844	93,532
Cumulative translation adjustment.....	(314)	(351)
Deferred compensation.....	(597)	—
Unrealized holding gain on available-for-sale securities	27	—
Accumulated deficit.....	<u>(90,499)</u>	<u>(84,648)</u>
Total stockholders' equity.....	<u>35,786</u>	<u>8,800</u>
	<u>\$ 41,950</u>	<u>\$ 16,816</u>

The accompanying notes are an integral part of these consolidated balance sheets.

ECHELON CORPORATION
CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share amounts)

	<u>For the Year Ended December 31,</u>		
	<u>1998</u>	<u>1997</u>	<u>1996</u>
REVENUES:			
Product	\$ 29,163	\$ 24,665	\$ 20,708
Service	<u>3,038</u>	<u>3,637</u>	<u>3,282</u>
Total revenues	<u>32,201</u>	<u>28,302</u>	<u>23,990</u>
COST OF REVENUES:			
Cost of product	12,784	11,761	10,761
Cost of service	<u>1,836</u>	<u>1,810</u>	<u>1,142</u>
Total cost of revenues	<u>14,620</u>	<u>13,571</u>	<u>11,903</u>
Gross profit	<u>17,581</u>	<u>14,731</u>	<u>12,087</u>
OPERATING EXPENSES:			
Product development	7,564	7,121	7,526
Sales and marketing	12,535	12,128	11,577
General and administrative	<u>4,119</u>	<u>4,004</u>	<u>3,921</u>
Total operating expenses	<u>24,218</u>	<u>23,253</u>	<u>23,024</u>
Loss from operations	(6,637)	(8,522)	(10,937)
Interest and other income, net	<u>945</u>	<u>497</u>	<u>373</u>
Loss before provision for income taxes	(5,692)	(8,025)	(10,564)
PROVISION FOR INCOME TAXES	<u>159</u>	<u>189</u>	<u>152</u>
Net loss	<u>\$ (5,851)</u>	<u>\$ (8,214)</u>	<u>\$ (10,716)</u>
Basic net loss per share	<u>\$ (0.24)</u>	<u>\$ (0.44)</u>	<u>\$ (0.62)</u>
Shares used in computing basic net loss per share	<u>24,845</u>	<u>18,603</u>	<u>17,354</u>
Pro forma basic net loss per share	<u>\$ (0.20)</u>	<u>\$ (0.32)</u>	
Shares used in computing pro forma basic net loss per share	<u>29,405</u>	<u>25,756</u>	

The accompanying notes are an integral part of these consolidated financial statements.

ECHELON CORPORATION
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands)

	Convertible Preferred Stock		Common Stock		Additional Paid-In Capital	Cumulative Translation Adjustment	Deferred Compensation	Unrealized Holding Gains on Available-for-Sale Securities	Comprehensive Income (Loss)	Accumulated Deficit	Total
	Shares	Amount	Shares	Amount							
BALANCE AT DECEMBER 31, 1995.....	5,887	\$ 59	16,877	\$ 169	\$ 81,464	\$ 4	\$ —	\$ —		\$ (65,718)	\$ 15,978
Exercise of stock options.....	—	—	630	6	514	—	—	—		—	520
Sale of common stock, net.....	—	—	987	10	1,381	—	—	—		—	1,391
Comprehensive income (loss):											
Net loss.....	—	—	—	—	—	—	—	—	\$ (10,716)	(10,716)	(10,716)
Other comprehensive loss:											
Foreign currency translation adjustment.....	—	—	—	—	—	(35)	—	—	(35)	—	(35)
Comprehensive income (loss).....									<u>\$ (10,751)</u>		
BALANCE AT DECEMBER 31, 1996.....	5,887	59	18,494	185	83,359	(31)	—	—		(76,434)	7,138
Exercise of stock options.....	—	—	354	3	289	—	—	—		—	292
Repurchase of common stock, net.....	—	—	(16)	—	(16)	—	—	—		—	(16)
Sale of Series E preferred stock.....	2,000	20	—	—	9,900	—	—	—		—	9,920
Comprehensive income (loss):											
Net loss.....	—	—	—	—	—	—	—	—	\$ (8,214)	(8,214)	(8,214)
Other comprehensive loss:											
Foreign currency translation adjustment.....	—	—	—	—	—	(320)	—	—	(320)	—	(320)
Comprehensive income (loss).....									<u>\$ (8,534)</u>		
BALANCE AT DECEMBER 31, 1997.....	7,887	79	18,832	188	93,532	(351)	—	—		(84,648)	8,800
Exercise of stock options, net of repurchases.....	—	—	824	8	860	—	—	—		—	868
Issuance of common stock in connection with public offering, net issuance costs of \$3,253.....	—	—	5,000	50	31,697	—	—	—		—	31,747
Conversion of preferred stock to common stock..	(7,887)	(79)	7,887	79	—	—	—	—		—	—
Deferred compensation.....	—	—	—	—	755	—	(755)	—		—	—
Amortization of deferred compensation.....	—	—	—	—	—	—	158	—		—	158
Comprehensive income (loss):											
Net loss.....	—	—	—	—	—	—	—	—	\$ (5,851)	(5,851)	(5,851)
Other comprehensive income:											
Foreign currency translation adjustment.....	—	—	—	—	—	37	—	—	37	—	37
Unrealized holding gain on available-for-sale securities.....	—	—	—	—	—	—	—	27	27	—	27
Comprehensive income (loss).....									<u>\$ (5,787)</u>		
BALANCE AT DECEMBER 31, 1998.....	<u>—</u>	<u>\$ —</u>	<u>32,543</u>	<u>\$ 325</u>	<u>\$ 126,844</u>	<u>\$ (314)</u>	<u>\$ (597)</u>	<u>\$ 27</u>		<u>\$ (90,499)</u>	<u>\$ 35,786</u>

The accompanying notes are an integral part of these consolidated financial statements.

ECHELON CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	<u>For the Year Ended December 31,</u>		
	<u>1998</u>	<u>1997</u>	<u>1996</u>
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net loss	\$ (5,851)	\$ (8,214)	\$(10,716)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	962	715	771
Deferred compensation expense.....	158	—	—
Loss (gain) on disposal of fixed assets	7	—	(13)
Change in operating assets and liabilities:			
Accounts receivable.....	(749)	(579)	332
Inventories	(920)	(852)	319
Other current assets.....	(974)	150	149
Accounts payable.....	(294)	281	(439)
Accrued liabilities.....	73	252	104
Deferred revenues.....	(1,467)	(1,177)	552
Deferred rent.....	(137)	(57)	(69)
Net cash used in operating activities	<u>(9,192)</u>	<u>(9,481)</u>	<u>(9,010)</u>
CASH FLOWS FROM INVESTING ACTIVITIES:			
Purchase of held-to-maturity short-term investments	—	(10,740)	(10,068)
Purchase of available-for-sale short-term investments	(54,579)	—	—
Proceeds from maturities of held-to-maturity short-term investments	2,981	7,759	22,117
Proceeds from sales and maturities of available-for-sale short-term investments	37,078	—	—
Capital expenditures	(2,263)	(628)	(872)
Proceeds from sale of fixed assets	3	35	13
Net cash provided by (used in) investing activities	<u>(16,780)</u>	<u>(3,574)</u>	<u>11,190</u>
CASH FLOWS FROM FINANCING ACTIVITIES:			
Proceeds from issuance of preferred and common stock, net of offering costs.....	32,615	10,196	1,911
EFFECT OF EXCHANGE RATES ON CASH	37	(320)	(35)
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS.....	6,680	(3,179)	4,056
CASH AND CASH EQUIVALENTS:			
Beginning of year	<u>4,872</u>	<u>8,051</u>	<u>3,995</u>
End of year	<u>\$11,552</u>	<u>\$ 4,872</u>	<u>\$ 8,051</u>
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION:			
Cash paid for income taxes.....	<u>\$ 196</u>	<u>\$ 185</u>	<u>\$ 123</u>

The accompanying notes are an integral part of these consolidated financial statements.

ECHELON CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

December 31, 1998

1. ORGANIZATION OF THE COMPANY:

Echelon Corporation (the "Company") was incorporated in Delaware in January 1989. The Company develops, markets and supports a family of hardware and software products and services that enable OEMs and systems integrators to design and implement open, interoperable, distributed control networks. The Company's products are based on its LONWORKS networking technology, an open standard for interoperable networked control developed by the Company. In a LONWORKS control network, intelligent control devices, called nodes, communicate using the Company's LonTalk protocol. The Company sells its products and services to the building, industrial, transportation, home and other automation markets.

The Company emerged from the development stage during 1990. However, the Company continues to be subject to the risks and challenges associated with other companies in a comparable stage of development including among others: history of losses; fluctuation in operating results; dependence on OEMs and distribution channels; dependence on key manufacturers; competition; volatility of stock price; dependence on key personnel; new products and rapid technological change; market acceptance of interoperability; international operations and currency fluctuations; lengthy sales cycle; limited protection of intellectual property rights; risks of product defects or misuse; regulatory actions; voluntary standards and control by existing stockholders.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

Principles of Consolidation

The Company's consolidated financial statements reflect operations of the Company and its wholly owned subsidiaries. All significant intercompany transactions and balances have been eliminated.

Use of Estimates in the Preparation of Financial Statements

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Revenue Recognition and Product Warranty

The Company's revenues are derived from the sale and license of its products and to a lesser extent, from fees associated with training and technical support offered to its customers. Product revenues consist of revenues from hardware sales and software licensing arrangements. Revenues from software licensing arrangements have not been significant to date. Service revenues consist of product support (including software post-contract support services) and training.

Revenue from hardware sales are recognized upon shipment to the customer. Estimated reserves for warranty costs as well as reserves for sales returns and allowances related to anticipated return of products sold to distributors with limited rights of return, which are not material to the consolidated financial statements, are recorded at the time of sale. Revenue from software sales, including sales to distributors, are recognized upon shipment of the software if there are no significant post-delivery obligations and if collection is probable. The Company generally has not had any significant post-delivery obligations associated with the sale of its products. Service revenue is recognized as the training services are performed, or ratably over the term of the support period.

During 1990, the Company entered into separate licensing agreements with Motorola, Inc. ("Motorola") and Toshiba Corporation ("Toshiba") which expire in January 2001 and January 2000, respectively, unless renewed. Motorola and Toshiba have the right to terminate the agreement at any time. Motorola has announced that it will discontinue distribution of Neuron Chips after January 31, 2001. Motorola is a significant stockholder and is also a related party to the Company due to its representation on the Company's Board of Directors during 1998, part of 1997 and 1996. The agreements provide, among other things, for the worldwide right to manufacture and distribute products subject to the licensed technology and requires the Company to provide support and unspecified updates to the licensed technology over the terms of the agreements, including support relating to compatibility testing and qualification of updates to the licensed technology. The agreements also provide for nonrefundable advance royalty payments aggregating \$6,750,000, which were received by the Company in 1990 and 1991. These payments are being recognized as revenue ratably over the ten-year royalty period due to the ongoing obligation to provide support and unspecified updates to the licensed technology. As of December 31, 1998, the Company has deferred \$1,350,000 (of which \$675,000 is classified as a long-term liability) of royalty payments that will be recognized in future periods. Any additional royalties that are reported by Motorola or Toshiba are recognized as revenue upon receipt of such royalties by the Company. Product revenues for the years ended December 31, 1998, 1997 and 1996 each include \$675,000 related to these advance royalty payments. For the years ended December 31, 1998, 1997 and 1996, Motorola accounted for approximately \$282,000, \$360,000 and \$845,000 of total revenues, respectively.

Cash and Cash Equivalents

The Company considers bank deposits, money market investments and all debt and equity securities with an original maturity of three months or less as cash and cash equivalents.

Short-Term Investments

The Company classifies its investments in debt and equity securities as available-for-sale in accordance with Statement of Financial Accounting Standards No. 115, "Accounting for Certain Investments in Debt and Equity Securities." Securities classified as available-for-sale are reported at fair market value with the related unrealized holding gains and losses, net of tax, being included in other comprehensive income (loss) in the accompanying consolidated statement of stockholders' equity.

As of December 31, 1998, the Company's available-for-sale securities had contractual maturities of from three to twenty months and an average maturity of ten months. The fair value of available-for-sale securities was determined based on quoted market prices at the reporting date for those instruments. As of December 31, 1998 the amortized cost basis, aggregate fair value and gross unrealized holding gains and losses by major security type were as follows (in thousands):

	Amortized Cost	Aggregate Fair Value	Unrealized Holding Gain (Loss)
U.S. corporate securities:			
Commercial paper	\$ 5,160	\$ 5,160	\$ --
Certificates of deposit	2,001	2,001	--
Corporate notes and bonds	<u>9,315</u>	<u>9,342</u>	<u>27</u>
	16,476	16,503	27
Foreign securities	<u>998</u>	<u>998</u>	<u>--</u>
Total investments in debt and equity securities	<u>\$ 17,474</u>	<u>\$ 17,501</u>	<u>\$ 27</u>

At December 31, 1997, short-term investments consisted of U.S. government securities with original maturities of approximately five months. These short-term investments were classified as held-to-maturity and were valued using the amortized cost method, which approximated the fair market value.

Inventories

Inventories are stated at the lower of cost (first-in, first-out) or market and include material, labor and manufacturing overhead. Inventories consist of the following (in thousands):

	December 31,	
	1998	1997
Purchased materials.....	\$ 1,671	\$ 1,791
Work-in-process.....	—	130
Finished goods	<u>1,693</u>	<u>523</u>
	<u>\$ 3,364</u>	<u>\$ 2,444</u>

Property and Equipment

Property and equipment are stated at cost. Depreciation is provided using the straight-line method over the estimated useful lives of two to five years for computer and other equipment and furniture and fixtures. Leasehold improvements are amortized over the shorter of the remaining lease term or the estimated useful life of the improvements using the straight-line method.

Software Development Costs

The Company capitalizes eligible computer software development costs upon the establishment of technological feasibility, which the Company has defined as completion of a working model. For the years ended December 31, 1998, 1997 and 1996, costs that were eligible for capitalization were insignificant and, thus, the Company has charged all software development costs to product development expense in the accompanying consolidated statements of operations.

Accrued Liabilities

Accrued liabilities consisted of the following (in thousands):

	<u>December 31,</u>	
	<u>1998</u>	<u>1997</u>
Accrued payroll and related costs	\$ 1,008	\$ 1,081
Accrued marketing costs	354	334
Other accrued liabilities	<u>705</u>	<u>573</u>
	<u>\$ 2,067</u>	<u>\$ 1,988</u>

Foreign Currency Translation

The functional currency of the Company's subsidiaries is the local currency. Accordingly, all assets and liabilities are translated into U.S. dollars at the current exchange rate as of the applicable balance sheet date. Revenues and expenses are translated at the average exchange rate prevailing during the period. Gains and losses resulting from the translation of the financial statements are included in other comprehensive income (loss) in the accompanying consolidated statement of stockholders' equity. Currently, the Company does not employ a foreign currency hedge program utilizing foreign currency exchange contracts as the foreign currency transactions and risks to date have not been significant.

Concentrations of Credit Risk

Financial instruments which potentially subject the Company to concentrations of credit risk consist principally of temporary cash investments and trade receivables. The Company has cash investment policies that limit the amount of credit exposure to any one financial institution and restrict placement of these investments to financial institutions evaluated as highly creditworthy. Concentrations of credit risk with respect to trade receivables are limited due to the large number of customers comprising the Company's customer base and their dispersion across many different industries and geographies. With respect to trade receivables, the Company performs ongoing credit evaluations of its customers' financial condition. Additionally, the Company establishes an allowance for doubtful accounts based upon factors surrounding the credit risk of specific customers, historical trends and other available information. No single accounts receivable balance was greater than 10% as of December 31, 1998 and 1997, respectively.

Computation of Basic Net Loss Per Share and Pro Forma Basic Net Loss Per Share

Historical net loss per share has been calculated under Statement of Financial Accounting Standards (SFAS) No. 128, "Earnings per Share." SFAS No. 128 requires companies to compute earnings per share under two different methods (basic and diluted). Basic net loss per share is calculated by dividing net loss by the weighted average shares of common stock outstanding during the period. No diluted loss per share information has been presented in the accompanying consolidated statements of operations since potential common shares from the conversion of preferred stock, stock options and warrants are antidilutive. The Company evaluated the requirements of the Securities and Exchange Commission Staff Accounting Bulletin No. 98 ("SAB 98"), and concluded that there are no nominal issuances of common stock or potential common stock which would be required to be shown as outstanding for all periods as outlined in SAB 98.

Pro forma basic net loss per share has been calculated assuming the conversion of the outstanding preferred stock into an equivalent number of shares of common stock, as if the shares had been converted on the dates of their issuance.

New Accounting Pronouncements

In March 1998, the AICPA issued SOP 98-1, "Accounting for the Costs of Computer Software Developed or Obtained for Internal Use". SOP 98-1 is effective for the Company's fiscal year beginning January 1, 1999 and provides guidance on the capitalization of software for internal use. Management believes the adoption of SOP 98-1 will not have a material effect on the Company's financial statements.

In April 1998, the AICPA issued SOP 98-5 "Reporting the Costs of Start-up Activities". SOP 98-5 is effective for the Company's fiscal year beginning January 1, 1999. SOP 98-5 provides guidance on the financial reporting of start-up costs and organization costs and requires such costs to be expensed as incurred. Management believes the adoption of SOP 98-5 will not have a material effect on the Company's financial statements.

In June 1998, the Financial Accounting Standards Board issued SFAS No. 133, "Accounting for Derivative Investments and Hedging Activities," which establishes standards for the accounting for derivative transactions and derivative portion of certain other contracts. SFAS No. 133 will become effective for the Company's year beginning January 1, 2000. Management believes that SFAS No. 133 will not have a material effect on the Company's financial statements.

3. SEGMENT DISCLOSURE:

In 1998, the Company adopted SFAS 131, "Disclosures about Segments of an Enterprise and Related Information." Operating segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision maker in deciding how to allocate resources and in assessing business performance. The Company's chief operating decision-making group is the Executive Staff, which is comprised of the Chief Executive Officer and the Vice Presidents. SFAS 131 also requires disclosures about products and services, geographic areas and major customers. The adoption of SFAS 131 did not affect results of operations or the financial position of the Company but did affect the disclosure of segment information.

The Company operates in one principal industry segment: the design, manufacture and sale of products for the control network industry, and markets its products primarily to the building automation, industrial automation, transportation, and home automation markets. The Company's products are marketed under the LONWORKS brand name which provides the infrastructure and support required to implement and deploy open, interoperable, control network solutions. All of the Company's products either incorporate or operate with the Neuron Chip and the LonTalk protocol. The Company also provides services to customers which consist of technical support and training courses covering its LONWORKS network technology and products. The Company offers approximately 80 products and services that together constitute the LONWORKS system. Any given customer purchases a small subset of such products and services that are appropriate for that customer's application.

The Company manages its business segments primarily on a geographic basis. The Company's reportable segments are comprised of the Americas, Europe, Middle East and Africa ("EMEA") and Asia Pacific/ Japan. Each geographic segment provides products and services as further described in Note 1. The Company evaluates the performance of its geographic segments based on profit or loss from operations. Profit or loss for each geographic segment includes sales and marketing expenses and other charges directly attributable to the segment and excludes certain expenses which are managed outside the reportable segments. Costs excluded from segment profit or loss primarily consist of unallocated corporate expenses, comprised of product development costs, corporate marketing costs and other general and administrative expenses which are separately managed. The Company has no long-lived assets, other than property and equipment. Long-lived assets are attributed to geographic areas based on the country where the assets are located. As of December 31, 1998 and 1997, long-lived assets of approximately \$2.4 million and \$1.2 million were domiciled in the United States. Long-lived assets for all other locations is not material to the consolidated financial statements. Assets and the related depreciation and amortization are not being reported by segment because the information is not reviewed by the Executive Staff to make decisions about resources to be allocated to the segments based on their performance.

In North America, the Company sells its products through a direct sales organization. Outside the United States, direct sales, applications engineering and customer support are conducted through the Company's operations in Europe, Japan and China. Revenues are attributed to geographic areas based on the country where the customer is domiciled. Summary information by segment for the years ended December 31, 1998, 1997 and 1996 is as follows (in thousands):

	Year Ended December 31,		
	1998	1997	1996
Revenues from customers:			
Americas	\$ 13,447	\$ 11,219	\$ 10,354
EMEA	13,484	12,226	9,100
APJ	4,338	3,758	3,751
Unallocated	<u>932</u>	<u>1,099</u>	<u>785</u>
Total	<u>\$ 32,201</u>	<u>\$ 28,302</u>	<u>\$ 23,990</u>
Gross profit (loss):			
Americas	\$ 8,377	\$ 7,020	\$ 6,204
EMEA	6,467	6,034	4,822
APJ	2,721	2,519	2,536
Unallocated	<u>16</u>	<u>(842)</u>	<u>(1,475)</u>
Total	<u>\$ 17,581</u>	<u>\$ 14,731</u>	<u>\$ 12,087</u>
Income (loss) from operations:			
Americas	\$ 5,085	\$ 3,560	\$ 2,854
EMEA	3,496	2,835	1,046
APJ	329	620	585
Unallocated	<u>(15,547)</u>	<u>(15,537)</u>	<u>(15,422)</u>
Total	<u>\$ (6,637)</u>	<u>\$ (8,522)</u>	<u>\$ (10,937)</u>

One customer, the sole independent distributor of the Company's products in Europe since December 1997, accounted for 22.6% and 10.9% of total revenues for the years ended December 31, 1998 and 1997, respectively. No single customer accounted for 10% or more of total revenues for the year ended December 31, 1996.

4. COMMITMENTS:

The Company leases its facilities under operating leases which expire on various dates through 2003. As of December 31, 1998, future minimum lease payments under such agreements were as follows (in thousands):

1999.....	\$ 1,629
2000.....	840
2001.....	70
2002.....	70
2003.....	<u>35</u>
	<u>\$ 2,644</u>

Rent expense for the years ended December 31, 1998, 1997 and 1996 was approximately \$1,802,000, \$1,818,000 and \$1,768,000, respectively. Certain lease agreements provide for escalating rent payments over the term of the lease. Rent expense under these agreements is recognized on a straight-line basis. As of December 31, 1998 and 1997, the Company has accrued approximately \$246,000 and \$383,000, respectively, of deferred rent related to these agreements of which \$170,000 and \$137,000 is included in accrued liabilities as of December 31, 1998 and 1997, respectively, in the accompanying consolidated balance sheets.

5. STOCKHOLDERS' EQUITY:

Preferred Stock

With the closing of the Company's initial public offering ("IPO") in July 1998, all of the outstanding preferred stock automatically converted into 7,887,381 shares of common stock. Upon conversion of the outstanding preferred stock to common stock, such preferred stock was retired. As of December 31, 1998, the Company was authorized to issue 5,000,000 shares of new \$0.01 par value preferred stock, of which none was outstanding as of December 31, 1998.

Common Stock

Upon completion of the Company's IPO, the Company was authorized to issue 100,000,000 shares of \$0.01 par value common stock. During 1998, 1997 and 1996, the Company sold 4,000, 5,000 and 1,005,000 shares of common stock, respectively, at the fair value, as determined by the Board of Directors of \$2.00 per share during 1998, \$1.40 per share during 1997 and \$1.29 per share to \$1.40 per share during 1996 under stock purchase agreements, primarily to certain officers of the Company. The stock purchased under these agreements vests annually over four years. As of December 31, 1998, 742,500 shares of common stock issued and outstanding under these stock purchase agreements and previous stock purchase agreements were unvested and subject to repurchase by the Company, at the Company's discretion, at prices ranging from \$1.10 to \$1.40 per share and a weighted average price of \$1.31 per share.

Warrants

In connection with the issuance of the Series D preferred stock in 1994, the Company granted certain investment bankers warrants to purchase 30,000 shares of the Company's common stock at \$12.00 per share. These warrants expired on February 2, 1999.

In addition, in connection with the issuance of the Series E preferred stock in 1997, warrants to purchase an aggregate of 400,000 shares of common stock at a per share exercise price of \$5.00 were issued (the "Series E Warrants" and together with the Common Stock Warrants, the "Warrants"). The Series E Warrants are exercisable at any time until their expiration on the earlier of May 15, 2002 or a Change in Control. Each Warrant contains a cashless conversion right that allows the holder to receive a number of shares of the Company's common stock equal to the quotient obtained by dividing the value of the Warrant on the date of exercise, which value is determined by subtracting (i) the aggregate exercise price of the Warrant from (ii) the aggregate fair market value of the Warrant shares on the date of exercise, by the fair market value of one share of the Company's common stock on the date of exercise, as determined by the market price generally determined with reference to the closing price of the common stock as reported on the Nasdaq National Market. As of December 31, 1998, these Series E Warrants are exercisable but no warrants had been exercised. At the date of issuance, the fair market value of these Warrants was deemed to be immaterial.

1988 Stock Option

During 1988, the Company adopted the 1988 Stock Option Plan (the "1988 Plan") for key employees, officers and directors. The Company has reserved 8,900,000 shares under the 1988 Plan. Incentive stock options to purchase shares of common stock were granted at not less than 100% of the fair market value and generally have a term of five years from the date of grant, not to exceed ten years. The 1988 Plan also provides for holders of non-qualified stock options to purchase shares at not less than 85% of the fair market value. Options generally vest ratably over four years. Fair market value for these grants was determined by the Board of Directors prior to the stock becoming available on a public market.

The 1988 Plan also allows for the issuance of options which are immediately exercisable through execution of a restricted stock purchase agreement. Shares purchased pursuant to a stock purchase agreement generally vest over four years. In the event of termination of employment, the Company, at its discretion, may repurchase unvested shares at a price equal to the original issue price. Options granted under the 1988 Plan will remain outstanding in accordance with their original terms. However, effective April 1997, the Board of Directors determined that no further options will be granted under the 1988 Plan.

1997 Stock Plan

During 1997, the Company adopted the 1997 Stock Plan (the "1997 Plan") for key employees, officers and directors. A total of 6,200,000 shares of Common Stock are currently reserved for issuance pursuant to the 1997 Plan, plus annual increases on the first day of the Company's fiscal year (beginning in 1999) not to exceed the lesser of (i) 5,000,000 shares or (ii) 5% of the outstanding shares on such date. Incentive stock options to purchase shares of common stock may be granted at not less than 100% of the fair market value and generally have a term of five years from the date of grant, not to exceed ten years. The exercise price of nonstatutory stock options and stock purchase rights granted under the 1997 Plan is determined by the Administrator, but will also be at least equal to 100% of the fair market value per share of common stock on the grant or issue date, except that up to 10% of the aggregate number of shares reserved for issuance under the 1997 Plan (including shares that have been issued or are issuable in connection with options exercised or granted under the 1997 Plan) may have exercise prices that are from 0% to 100% of the fair market value of the common stock on the date of grant. Options generally vest ratably over four years. Fair market value is determined with reference to the closing price of the common stock as reported on the Nasdaq National Market on the date immediately preceding grant date.

The 1997 Plan also allows for the issuance of options which are immediately exercisable through execution of a restricted stock purchase agreement. Shares purchased pursuant to a stock purchase agreement generally vest annually over four years. In the event of termination of employment, the Company, at its discretion, may repurchase unvested shares at a price equal to the original issuance price. As of December 31, 1998, 335,250 shares of common stock issued and outstanding under these restricted stock purchase agreements and previous stock purchase agreements were unvested and subject to repurchase by the Company, at the Company's discretion, at prices ranging from \$1.00 to \$5.00 per share and a weighted average price of \$1.47 per share.

1998 Directors Option Plan

Non-employee directors are entitled to participate in the 1998 Director Option Plan (the "Director Plan"). The Director Plan was adopted by the Board of Directors in May 1998 and became effective upon the closing of the stock offering in July 1998. The Director Plan has a term of ten years, unless terminated sooner by the Board. A total of 300,000 shares of Common Stock have been reserved for issuance under the Director Plan, plus an increase each year equal to 100,000 shares or such lesser amount as the Board may determine. The Director Plan provides for the automatic grant of 25,000 shares of common stock (the "First Option") to each non-employee director on the date he or she first becomes a director. Each non-employee director shall also automatically be granted an option to purchase 10,000 shares (a "Subsequent Option") on the date of the Company's Annual Stockholder Meeting provided that he or she is re-elected to the Board or otherwise remains on the Board, if on such date he or she shall have served on the Board for at least the preceding six months. Each First Option and each Subsequent Option shall have a term of five years and the shares subject to the option shall vest as to 25% of the shares subject to option on each anniversary of the date of grant. The exercise price of each First Option and Subsequent Option shall be 100% of the fair market value per share of the common stock, generally determined with reference to the closing price of the common stock as reported on the Nasdaq National Market on the date preceding grant date. During 1998, options to purchase an aggregate of 60,000 shares were granted under the Director Plan, with an exercise price equal to \$7.00 per share.

In the event of a merger of the Company with or into another corporation or the sale of substantially all of the assets of the Company, each option shall be assumed or an equivalent option may be substituted by the successor corporation. Following such assumption or substitution, if the optionee's status as a director of the successor corporation terminates other than upon a voluntary resignation by the optionee, the option shall become fully exercisable, including as to shares as to which it would not otherwise be exercisable. If the outstanding options are not assumed or substituted, the options shall become fully vested and exercisable. Options granted under the Director Plan must be exercised within three months of the end of the optionee's tenure as a director of the Company, or within twelve months after such director's termination by death or disability, but in no event later than the expiration of the option's five year term; provided, however, that shares subject to an option granted to a director who has served as a director with the Company for at least five years shall become fully vested and exercisable for the remainder of the option's five year term upon such director's termination. No option granted under the Director Plan is transferable by the optionee other than by will or the laws of descent and distribution, and each option is exercisable, during the lifetime of the optionee, only by such optionee.

The following table summarizes option activity under all plans (prices are weighted average prices):

	Year Ended December 31,					
	1998		1997		1996	
	<u>Shares</u>	<u>Price</u>	<u>Shares</u>	<u>Price</u>	<u>Shares</u>	<u>Price</u>
Options outstanding,						
Beginning of year.....	4,316,432	\$ 1.28	2,851,514	\$ 1.14	1,993,876	\$ 0.84
Granted.....	1,707,450	5.07	2,185,700	1.40	1,618,700	1.38
Cancelled.....	(613,413)	5.51	(386,626)	1.29	(130,938)	1.07
Exercised.....	(824,915)	1.19	(354,156)	0.83	(630,124)	0.83
Options outstanding,						
end of year	<u>4,585,554</u>	<u>\$ 2.18</u>	<u>4,316,432</u>	<u>\$ 1.28</u>	<u>2,851,514</u>	<u>\$ 1.14</u>
Exercisable, end of year.....	<u>3,891,704</u>	<u>\$ 2.03</u>	<u>4,280,307</u>	<u>\$ 1.29</u>	<u>2,754,149</u>	<u>\$ 1.16</u>

Certain options issued under the 1988 and 1997 Plans may be exercised any time prior to their expiration. In addition, the Company has the right, upon termination of an option holder's employment or service with the Company, at its discretion, to repurchase any unvested shares issued under the 1988 and 1997 Plans at the original purchase price. As of December 31, 1998, 335,250 shares were subject to repurchase by the Company at prices ranging from \$1.00 to \$5.00 per share and a weighted average repurchase price of \$1.47. Of the 3,891,704 options exercisable as of December 31, 1998, 1,361,858 were vested.

On December 14, 1998, the Board of Directors authorized the repricing of 393,350 options to purchase the Company's common stock at \$3.125 price per share (the fair market value as reported on the Nasdaq National Market on the date immediately preceding the authorized date) that were previously priced at \$7.00 per share. The Board action excluded options granted to all the officers and directors of the Company.

In connection with the issuance of stock options during 1998, the Company has recorded deferred compensation in the aggregate amount of approximately \$755,000, representing the difference between the deemed fair value of the Company's common stock and the exercise price of the stock options at the date of grant. The Company is amortizing the deferred compensation expense over the shorter of the period in which the employee provides services or the applicable vesting period, which is typically 48 months. For the year ended December 31, 1998, amortization expense was approximately \$158,000. Deferred compensation is decreased in the period of forfeiture arising from the early termination of an option holder's services.

The Company accounts for the Plans under APB Opinion No. 25, "Accounting for Stock Issued to Employees." Had compensation expense for the Plans been determined consistent with SFAS No. 123, "Accounting for Stock-Based Compensation," the Company's net loss and basic net loss per share would have been increased to the following pro forma amounts (in thousands, except per share amounts):

	Year Ended December 31,		
	1998	1997	1996
Net loss:			
As reported	\$(5,851)	\$(8,214)	\$(10,716)
Pro forma	(6,636)	(8,626)	(10,992)
Basic net loss per share:			
As reported	\$ (0.24)	\$ (0.44)	\$ (0.62)
Pro forma	(0.27)	(0.46)	(0.63)

The weighted-average grant date fair value of options granted during 1998, 1997 and 1996 was \$0.87, \$0.19 and \$0.17, respectively. The fair value of each option grant is estimated on the date of grant using the minimum value method and the Black-Scholes option pricing model with the following weighted average assumptions used for grants in 1998, 1997 and 1996: risk-free interest rates of 5.15%, 5.60% and 6.10%, respectively; expected dividend yields of zero percent; expected lives of 4 years. The expected volatility for 1998 was calculated at 70%. Because the Company was a non-public entity in 1996 and 1997, it has omitted expected volatility in determining a value for its options during those years.

The following table summarizes the stock options outstanding as of December 31, 1998:

Exercise Price Range	Options Outstanding			Options Exercisable	
	Number Outstanding at December 31, 1998	Weighted Average Remaining Life (in years)	Weighted Average Exercise Price	Number Exercisable December 31, 1998	Weighted Average Exercise Price
\$0.15	22,500	0.64	\$ 0.15	22,500	\$ 0.15
0.77-1.29	750,766	1.44	1.08	750,766	1.08
1.40-2.00	2,832,188	3.17	1.45	2,606,188	1.40
2.63-3.88	453,850	4.54	3.10	36,500	2.95
5.00-7.00	526,250	4.49	6.93	475,750	6.99
	<u>4,585,554</u>	<u>3.16</u>	<u>\$ 2.18</u>	<u>3,891,704</u>	<u>\$ 2.03</u>

Shares Reserved

As of December 31, 1998, the Company had shares of common stock reserved for future issuance as follows:

Stock Option Plans	7,843,854
Warrants to Purchase Common Stock	<u>430,000</u>
	<u>8,273,854</u>

6. INCOME TAXES:

The Company accounts for income taxes using SFAS No. 109, "Accounting for Income Taxes". SFAS No. 109 provides for an asset and liability approach under which deferred income taxes are based upon enacted tax laws and rates applicable to the periods in which the taxes become payable.

Income taxes for the years ended December 31, 1998, 1997 and 1996 primarily consist of taxes related to foreign subsidiaries.

The components of the net deferred income tax asset are as follows (in thousands):

	December 31,	
	1998	1997
Net operating loss carryforwards.....	\$ 28,333	\$ 26,315
Deferred revenue.....	601	940
Tax credit carryforwards.....	4,063	3,537
Capitalized research and development costs.....	1,678	1,852
Reserves and other cumulative temporary differences.....	<u>1,379</u>	<u>906</u>
	36,054	33,550
Valuation allowance.....	<u>(36,054)</u>	<u>(33,550)</u>
Net deferred income tax asset.....	<u>\$ —</u>	<u>\$ —</u>

As of December 31, 1998, the Company had net operating loss carryforwards for Federal and state income tax reporting purposes of approximately \$80.1 million and \$5.0 million, respectively, which expire at various dates through 2018. In addition, as of December 31, 1998, the Company had tax credit carryforwards of approximately \$4.1 million, which expire at various dates through 2018. The Internal Revenue Code of 1986, as amended, contains provisions that may limit the net operating loss and credit carryforwards available for use in any given period upon the occurrence of certain events, including a significant change in ownership interests, such as the IPO completed in July 1998.

A valuation allowance has been recorded for the entire deferred tax asset as a result of uncertainties regarding the realization of the asset balance due to the history of losses and the variability of operating results. As of December 31, 1998 and 1997, the Company had no significant deferred tax liabilities.

ECHELON CORPORATION
 VALUATION AND QUALIFYING ACCOUNTS
 (in thousands)

ALLOWANCE FOR DOUBTFUL ACCOUNTS AND
 SALES ALLOWANCES

<u>Description</u>	<u>Beginning Balance</u>	<u>Charged to Revenues and Expenses</u>	<u>Deductions</u>	<u>Ending Balance</u>
Year ended December 31, 1996:	\$ 478	341	—	\$ 819
Year ended December 31, 1997:	819	35	292	562
Year ended December 31, 1998:	\$ 562	620	—	\$ 1,182

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

ECHELON CORPORATION

By: /s/ OLIVER R. STANFIELD
Oliver R. Stanfield
Vice President Finance, and Chief Financial Officer (Duly
Authorized Officer and Principal Financial and Accounting
Officer)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints M. Kenneth Oshman and Oliver R. Stanfield his true and lawful attorney-in-fact and agent, with full power of substitution and, for him and in his name, place and stead, in any and all capacities to sign any and all amendments to this Report on Form 10-K, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

PURSUANT TO THE REQUIREMENTS OF THE SECURITIES EXCHANGE ACT OF 1934, THIS REPORT HAS BEEN SIGNED BY THE FOLLOWING PERSONS ON BEHALF OF THE REGISTRANT AND IN THE CAPACITIES AND ON THE DATES INDICATED.

<u>Signatures</u>	<u>Title</u>	<u>Date</u>
<u>/s/ M. KENNETH OSHMAN</u> M. Kenneth Oshman	Chairman of the Board, President and Chief Executive Officer (Principal Executive Officer)	March 29, 1999
<u>/s/ OLIVER R. STANFIELD</u> Oliver R. Stanfield	Vice President of Finance and Chief Financial Officer (Principal Financial and Principal Accounting Officer)	March 29, 1999
<u>/s/ ARMAS CLIFFORD MARKKULA, JR.</u> Armas Clifford Markkula, Jr.	Vice Chairman	March 29, 1999
<u>/s/ BERTRAND CAMBOU</u> Bertrand Cambou	Director	March 29, 1999
<u>/s/ ROBERT R. MAXFIELD</u> Robert R. Maxfield	Director	March 29, 1999
<u>/s/ RICHARD M. MOLEY</u> Richard M. Moley	Director	March 29, 1999
<u>/s/ ARTHUR ROCK</u> Arthur Rock	Director	March 26, 1999
<u>/s/ LARRY W. SONSINI</u> Larry W. Sonsini	Director	March 29, 1999

