

Artificial Intelligence Products Market

- *Development of a neuro computer.* A neuro computer processes and controls information by learning and thinking like a human being to solve problems. It processes audiovisual information that existing computers cannot. The U.S. and EC are leaders in neuro computer research and development, closely followed by Japan.

Electric machine manufacturers are developing an optical neuro computer which uses character recognition.

- *Software engineering and AI foundations.* The Software Engineering Research Foundation was set up in 1988 to facilitate research into software engineering through its sponsorship of international exchanges and conferences.

The International AI Foundation, established in 1988, is the first Japanese AI software technology research organization. It sponsors international exchanges related to AI, supports the development of AI systems and studies AI market trends and application technology.

Combination of Multi-Media Communications

- *Integrated Services Digital Network (ISDN) service.* NTT recently began INS Net 64, an ISDN service, in Tokyo, Osaka and Nagoya and will expand to other cities in the future. The service can transmit voices, data and images simultaneously. Expansion is expected to be slow as a national network will take time to install.

The basic fee to join the service is ¥4 600 for home users and ¥5 400 for businesses. Although the communication fee equals telephone rates, the acquisition cost is high because a terminal costs ¥200 000.

- *Japan's expanding VAN market.* The Japanese communications industry has undergone major liberalization since April 1985. In the Type I common carrier² business, NCCs entered the domestic communications market and two new common carriers entered the international communications market. More than 600 companies have been licensed as Special Type II³ and General Type II carriers.

MITI's survey on special service industries includes information on sales of established

VANs whose annual industry sales are in the order of ¥34 billion. However, some problems regarding VAN interconnections, security and reliability remain. VANs need to be changed from "information traffic controllers" to "information providers."

- *Electronic Data Interchange (EDI) promotes VAN.* EDI has attracted attention from VANs and users. It aims to exchange electronic data by establishing industrial standards for communication protocols and slip formats that will standardize company codes, product codes, business and work procedures. EDI will take time to implement but VAN service companies believe it will open up new markets.

The U.S. and Europe have established EDI standards and are requesting connection with Japanese EDI networks. However, Japan has multiple VAN service companies for each industry and standards differ by industry. Eventually, EDI will be a key item on the international VAN service menu.

- *International VAN business.* A 1987 amendment to Japan's Telecommunications Business Law permitted the establishment of international VAN businesses in Japan. In December 1988, two companies signed agreements with U.S. service companies to begin international VAN services following KDD adjustments.

By the end of 1988, 12 U.S./Japanese and three Japan/U.K. companies were registered as Special Type II common carriers. These companies offer value-added communication services such as mail box.

6 Internationalization and Intellectual Property Arguments

Intellectual Property

Copyright protection for software as intellectual property is an international concern. Intense international competition has resulted in infringement and the misuse of copyright, patent and trademark rights. These problems will worsen as society becomes more information-oriented and software dependent.

International Controversies

Japanese software programs came under copyright protection in January 1986 with revision of the Japan