Establishment of NTT Data Communications Systems

The largest information service firm in Japan, NTT Data Communications Systems, began operations on July 1, 1988. It is capitalized at ¥10 billion, has 6 800 employees and has set a sales target of ¥216 billion for its first year.

This company plans to enter the FA field by utilizing artificial intelligence (AI), interconnecting VANs and converting existing protocols into multi-media protocols through data communications equipment, data communications system design and programming services. The company aims to become a systems integrater.

Think Tank Boom and the Software Industry

The number of think tanks continues to grow. The first boom took place in the 1970s and, according to the Think Tank Association, by 1988 there were approximately 500 or 1 000, including think tank divisions of leading companies.

The realization that knowledge means business is spreading. Think tanks are established in city banks, credit banks and insurance companies. Banks recognize that the economy is becoming increasingly dependent on the software and information processing industries. Even consumer goods companies have established think tanks to investigate market trends.

4   Manufacturing and Distribution

Problems at Manufacturing Stage

The Industry Information Section of MITI's Industrial Structure Council predicts that there will be a shortage of 970 000 software engineers by the year 2000. The Sigma Project may alleviate the problem slightly but a shortage of 90 000 programmers and 310 000 system engineers is still expected.

A JISA survey on the information service industry identifies three industry concerns: personnel training, improvement of technical development and improvement of software productivity.

Personnel training in the areas of scheduling and specification design and planning is a priority, as is the training of office and management personnel.

Software productivity requires that software engineers have improved development skills and that there be improved management of the development process and better utilization of software development tools.

Supply is currently not able to meet the demand for software as it increases with the growth of an information-oriented society. Between 1980 and 1988, software industry sales increased by 35.5 per cent per year to a total of over ¥900 billion in 1988. Shortages meant that some users waited for up to two years for the completion of a software package. Demand is expected to continue to increase by 15.8 per cent per year until the year 2000.

The industry forecasts that software developers will concentrate on specialty applications. Other forecasts predict that software developers working on commission will join smaller firms to develop high value-added software. At the same time, these small and medium sized concerns will also develop high value-added software to compete with leading software developers and an increasing number of newcomers.

The Japanese software industry is competitive, highly profitable and has a high growth rate.

Promotion of Comprehensive Software Policy

- *MITI's education policy.* In March 1988, to overcome the shortage of software engineers, MITI began designating colleges with programs that could meet standards for the Information Processing Engineer Training Liaison Organization. By 1989, the number of colleges designated "information processing colleges" reached 129.

- *The Sigma Project.* Japan's largest research and development (R&D) project in the software industry is the Sigma Project, initiated in 1985 by the Information-Technology Promotion Agency (IPA). Sigma is a national project aimed at mass-producing software and developing a standard development system for use at development sites. Use of the system as an infrastructure could enhance industry productivity and quality if project results are distributed nationwide.

  Sigma consists of workstations at the development site known as the Sigma centre. Software developers can use the Sigma network to develp their products. The Sigma operating system (OS) is based on an AT&T version of UNIX.

  The Sigma centre offers promotion and distribution of general-purpose software products and tools;