

Chapter 2

NTT's ISDN Challenge

Takeshi Kawauchi
Vice President
NTT ISDN Promotion Department
Tokyo, Japan

Takeshi Kawauchi is Vice President of NTT's ISDN Promotion Department. He joined the company in 1963. After NTT was privatized in 1985, Mr. Kawauchi worked as Director of Business Planning, Network Services Headquarters, as well as the Vice Chairman of the Field Business Reform Committee, which was organized as a special task force for the company's president.

In 1990, Japan celebrated 100 years of telephone service and the following year began looking forward to the next 100 years.

The biggest challenge NTT faces as it approaches the next century is ISDN development. It is an essential step beyond basic telephone service and one of the best ways to meet the needs of the information society of the 21st century.

There are three critical points to consider when discussing ISDN in Japan. First, will ISDN services be the major commodity of the telecommunications business in the infrastructure of the 21st century? Second, since competition has been introduced in Japan's telecommunications industry, NTT must look at capital investment in ISDN from a long-term perspective. Finally, a successful evolution toward ISDN means a complete change in thinking for NTT employees. ISDN is a dramatic, new concept based on a digital technology that uses the public network in a radically different way. Many challenges simply cannot be handled by conventional work practices.

NTT first offered ISDN services in Japan in April 1988. There were 86,000 subscriber lines in the country as of January 1992 and demand continues to increase rapidly. At the end of fiscal year 1991, NTT met its goal of having 100,000 subscriber lines in operation. This rapid growth can be attributed to better customer understanding of ISDN applications and a crucial decision made by NTT's senior management in September 1989. It was at a board of directors meeting that the company's management decided to respond to nationwide demand for ISDN beginning in April 1991.

Creating the Market

The biggest hurdle for NTT when it first introduced ISDN in Japan was convincing customers that it would be a necessity of life in the new information age. Customers were very comfortable with basic telephone services and didn't initially understand how ISDN would enhance their lives. Although the additional benefits of ISDN were crystal clear to NTT, it was difficult to explain those benefits to customers.

NTT first marketed ISDN to customers in two ways: as a back-up circuit for customers who used vital corporate data communications circuits and for leased-circuit users who could significantly reduce their communications costs by switching to ISDN.

During the first year that NTT offered ISDN, most customers used it as a back-up circuit, which meant that their monthly usage charges for ISDN were nothing.

NTT's customers who shifted from conventional leased-circuit lines are using ISDN in a variety of ways. One newspaper company, for example, is using G4 facsimile to transmit articles and has been very impressed with the transmission quality, which is better than the 9600 b/s G3 facsimile. Another customer, a radio broadcasting station, now uses ISDN to transmit an announcer's voice from a baseball stadium to the radio station where it is then broadcast. The communications charge is one-tenth of what it was for a 9600 b/s leased circuit.

To sell ISDN, NTT has found that comparing the costs and benefits of ISDN with the cost and benefits of the circuits currently being used by a customer is a very effective marketing tool. NTT also has developed ISDN equipment for applications in new fields such as banking, accounting and insurance.

For example, banks that want to monitor nationwide automatic teller machines (ATMs) from a central location can now use NTT's ISDN terminal called SCOPE PORT. A number of Japanese banks already have introduced this visual monitoring system at their ATMs to monitor balances.

Another good example of an effective use of ISDN is an accounting office that now transmits files from floppy disks to its clients throughout Japan using NTT's new FD TRANSFER ISDN terminal. The company used to hand-deliver the information to its clients. And there is also an insurance company that uses ISDN to make trial calculations of insurance claims by sending photos of damaged vehicles to body shops by photo facsimile.

Since fall 1990, demand for nationwide ISDN-based corporate communications networks has grown dramatically, well exceeding NTT's initial forecast. Demand surged when customers realized two important benefits that ISDN offers: reduced communications costs, especially when compared with other means of communications such as leased-circuit lines or hand delivery of information; and rapid and flexible communications. Because ISDN allows companies to interconnect their headquarters' locations with their branch offices, customers also saw that ISDN could help strengthen their internal communications and corporate strategies.

In short, in addition to reducing costs, which is essential in today's competitive business environment, ISDN also offers value-added capabilities such as reducing the time it takes to perform many tasks and allowing remote monitoring of company operations.

NTT currently is looking at offering even more ISDN applications. NTT is always eager to learn from its customers and has, in fact, received several good ideas for new applications from its current customers.

ISDN was conceived to allow customers to use any transmission medium to communicate with anyone at any time and be charged only for one's communications time. Because of several technical breakthroughs, this concept is becoming a reality by serving today's sophisticated information society.

Responding to Nationwide Demand

NTT was at the right place at the right time with ISDN, as was Xerox with facsimile machines in the United States.

The original form of facsimile was released by Xerox's research institute in 1961. In 1988, 27 years later, demand for fax services suddenly increased due to a number of factors during the late 1980s. The drop in the cost of facsimile equipment was one factor. Another was the reduction in long-distance service charges after the AT&T divestiture. Users also finally realized that they could save an enormous amount of time using fax machines to communicate.

What initially led NTT to offer ISDN was the introduction of competition in the telecommunications market in Japan in 1985. When new common carriers (NCC) entered the interexchange services market, long-distance tariffs had to be revised five times because customers began to see communications as a commodity and demanded lower prices. NTT then launched ISDN services to provide inexpensive communications for customers using any transmission medium.

The decision by a major convenience store chain in Japan to adopt ISDN gave it a real boost because potential customers could view the benefits of ISDN in a real-life situation. The company used ISDN to link its headquarters to its 4400 nationwide stores to collect daily sales data and provide feedback.

From a service provider's point of view, though, there was a problem with this installation because the convenience store chain has many branches in remote areas. Installing just one circuit in a remote location is a very expensive option that many local divisions simply cannot afford.

From a managerial viewpoint, NTT is facing the biggest challenge of its long history. It must address the short-term question of how to balance current revenues and expenditures while making the long-term capital investment needed to lay the foundation for future telecommunications.

ISDN is a response to changing times. NTT feels that it has a social responsibility to meet this challenge and to promote further growth—despite critics who argue that ISDN is merely an extension of basic telephone

services. In reality, it is dramatically different than the services to which customers have become accustomed in recent years.

Once ISDN is widely accepted in Japan and throughout the world, a new global society will emerge that could be quite a cultural shock for some people. NTT must construct the infrastructure now that will be the foundation for Japan's information age services of the future. NTT has many new challenges ahead as it brings ISDN to the masses.

The current communications networks in Japan include a public switched voice network, leased circuits and switched digital data networks. The means of communications are voice, data and image. There are multiple carriers, including the NCCs, and an enormous variety of terminal equipment.

Although ISDN is just one of these commodity groups, it has, at the same time, transcended the conventional concept that the public network means the basic voice telephone network. The public network can no longer be viewed in such a narrow way.

Why ISDN Now?

What is NTT doing to prepare for the future?

As mentioned, the whole idea behind ISDN is to accommodate multiple communications media—voice, data and image—over the public network. Access should be easily available to all customers at a reasonably low cost.

Right now, only a small portion of Japan's ISDN is being used for non-corporate communications, which leaves a large, untapped market opportunity to expand ISDN to residential subscribers. Although there is a great, potential demand for services at this level, it will take a long time to bring ISDN to residential subscribers. In that sense, NTT has only just begun marketing ISDN.

Since NTT has entered its second century in the telecommunications business, it no longer has to explain what ISDN is, but does have to confront the question: "Why ISDN now?"

In his book, *Power Shift*, Alvin Toffler supplies an anecdote that could answer that question. He writes about how Wendy's International, a fast-food restaurant franchise, introduced an express packet order for customers who want to eat without getting out of their cars. This order includes a hamburger, french fries and a coke. To get an express packet, a customer just has to say, "express packet," which only takes three seconds, but produces exactly what the customer wants in the right amount of time. "Compared with other products, customers are purchasing an added value called quick response," Toffler says.

Toffler's example provides a glimpse of our future global economic system. People in these times want immediate gratification. As society continues to evolve and change, time will become an even more crucial factor.

One way to respond to complex customer needs that require quick changes and responses would be to link customers directly to the manufacturing process. ISDN's role in this scenario would be to act as an antenna at the front line to gather primary information that can be fed directly to the

strategy division responsible for manufacturing decisions. This type of system would be a competitive advantage for any company. On the other hand, to prepare for the expansion of ISDN in Japan, NTT must make even greater and faster fundamental changes than its customers.

One thing is certain. NTT cannot fully respond to the societal trends that are emerging with the existing system, rates, service quality, organization and structure that have evolved to support conventional telephone services. Although it may appear that NTT is undergoing a smooth transition involving its telephone service and that no fundamental reform is required internally, that observation is wrong.

A close look at ISDN usage patterns in Japan makes it clear that users will not be fully satisfied with the current state of communication services based upon conventional methods. ISDN is not merely a new type of switched service. It is a revolutionary change that is having a profound impact on the quality and standards required for switched services. NTT is promoting ISDN in Japan because it believes that bringing about change is the only viable alternative.