

Vol. 14, No. 7  
October 1999

Find TT on the web  
www.telecomtribune.com

# TELECOM

## TRIBUNE

### Inside...

Budget Request for FY 2000:  
Supercomputer and Intra-house  
Network to Be Emphasized ---- 1

CS Broadcasters Are Being  
Baptized by Market Principle -- 3

U.S. Internet Ventures:  
Global Implications ----- 4

ADSL: NCCs and ISPs to Fund a  
New Venture for Launching  
ADSL Services in Japan ----- 5

Rep. Yashiro Appointed MPT  
Minister and Reps. Kosaka  
and Maeda Appointed State  
Secretaries ----- 6

Statistics ----- 8

## TTNet Looks to SLL for Success

Katsumi IWASAKI,

President, Tokyo Telecommunication Network Co., Inc. (TTNet)



Katsumi Iwasaki

Tokyo Telecommunication Network (TTNet) was established in 1986 as a regional telecommunications service provider under the leadership of Tokyo Electric Power Co., Inc. (TEPCO). Initially the firm was providing leased circuit services in the Tokyo Metropolitan area. As deregulation proceeds, TTNet has expanded its business into indirect telephone service under the brand name of "Tokyo Denwa" (from January 7, 1998), dial-up Internet access service known as "Tokyo Denwa Internet" (from April 1, 1999) and international telephony services (from July 1, 1999). Since it acquired debt-ridden ASTEL Tokyo on April 1, 1999, it has been providing PHS services as well as "Tokyo Set," a discount service for the set of Tokyo Denwa and ASTEL Tokyo's PHS service. In order to provide nationwide data transmission services, TTNet founded "Power Nets Japan" with nine other regional NCCs affiliated with power utility companies. Although Tokyo Denwa, TTNet's flagship product, is gaining in popularity due to its lower telephone charges, the business is still running in the red due to expensive NTT's access charges. Katsumi Iwasaki, President of TTNet said that his firm will continue urging the government to reduce access charges while seeking out other inexpensive access networks such as wireless local loop (WLL), asymmetric digital subscriber line (ADSL) and personal handyphone system (PHS).

TT: "Tokyo Denwa" is gaining in popularity. How many subscribers do you have and what is your target figure?

**Iwasaki:** As the end of September 1999, we had 2.4 million subscribers for the service in Kanto region. I think we are doing quite well. We are targeting to win four million subscribers by the end of 2000.

TT: Is Tokyo Denwa making money?

**Iwasaki:** At the moment Tokyo Denwa is running in the red because of the expensive access charges imposed on us by NTT. MPT recently released a draft of the Long-Run Incremental Cost Model (LRIC). According to the draft model, the interconnection charges at the group center (GC) switches will be slashed by about 40%. If this is realized, we will be able to run our Tokyo

Denwa in the black ink and expand our business further.

TT: The U.S. government claimed that the MPT's LRIC is still too expensive.

**Iwasaki:** We also think so. For instance, the MPT model includes costs for remote terminals within the access charges. We believe the costs for remote terminals should be excluded. NTT argues that if remote terminals costs are excluded from access charges, then they have to increase the basic monthly charges by 300 yen. But we believe they do not need to increase the basic charges even if they exclude the remote terminals costs.

TT: TTNet is also providing an Internet access service called Tokyo Denwa Internet. The service is also popular among Internet

users.

**Iwasaki:** Since we launched the service in April 1999, we have gained a total of 40,000 subscribers. We are targeting to win 100,000 subscribers by the end of March 2000. It is popular because we provide our services at a monthly flat access charge of 1,750 yen, the lowest among ISPs. In addition, when users also subscribe to Tokyo Denwa, we charge only eight yen per three minutes. Ordinarily, Tokyo Denwa voice service costs nine yen per three minutes. Since the era of the Internet is coming, we will emphasize the Internet business.

TT: TTNet is a member of the ADSL Association. Will you launch ADSL services?

**Iwasaki:** We (the association) are planning to launch a one-year experiment by leasing "dry copper (unused metallic cable)" from NTT.

TT: NTT said it is planning to launch an ADSL experiment in December.

**Iwasaki:** For a long time, NTT had resisted ADSL services by saying ADSL systems employed in Europe and the U.S. may interfere ISDN communications. However, since MPT and academics recommended that it is necessary to introduce ADSL service using existing dry copper in order to let expand the Internet in Japan, NTT at last accepted the introduction of ADSL service in Japan. However, NTT is hoping to provide the ADSL service using NTT-spec modems and devices according to their scheme.

TT: Is your experiment different from NTT's?

**Iwasaki:** NTT will reportedly use an ADSL modem developed by NEC Corp. called amnet-c. But their system is expensive. There are some less expensive modems in Europe called amnet-a. Although NTT said the amnet-a may cause interference on the networks, carriers want to use them because they are less expensive. We will conduct our one-year experiment in order to confirm the usability of amnet-a on Japanese subscribers lines.

TT: Will the association carriers provide their ADSL services using the same system?

**Iwasaki:** Each carrier has its own strategy. Each has different upper layer systems and provide Internet services in different ways. So it is impossible for us (carriers) to provide ADSL services using the same systems. But we had better use the same modem.

### Budget Request for FY 2000

## Supercomputer and Intra-house Network to Be Emphasized

The Ministry of Posts and Telecommunications (MPT) requested a total of 129 billion yen in budget request for the fiscal 2000. New projects for fiscal 2000 include: supercomputer, networking consumer electronics, intelligent transport systems (ITS) and the Government Public Key Infrastructure. Shun Sakurai, Director of the Policy Division of Communications Bureau of MPT, said that MPT worked out the budget request with three focuses: Revitalizing the ailing

Japanese economy by fully utilizing IT; narrowing gaps between the U.S. and Japan in the level of IT utilization; and promoting participation of the elderly in the society by utilizing IT.

The budget request is also unique focusing the Millennium Project, an all government project toward the Millennium, led by the Prime Minister Obuchi. Seiko Noda, Minister of Posts and Telecommunications, reportedly said that she wanted to put an emphasis on SOHO

project for letting women get more job opportunities, informatization of schools and accessibility projects for the aged and the handicapped.

Followings are the major new projects to be launched with the new budget.

- R&D on the Super Internet (1 billion yen)

Unlike the present computer system which has been developed for connecting PCs each other, the Super Internet

Continued on page 6

Continued on page 2

**TTNet:***Continued from Page 1*

**TT:** I heard that the association recommended NTT provide its dry copper to them gratis.

**Iwasaki:** Since NTT maintains its dry copper, carriers have to pay for the costs. The discussion of free use is based on the fact that NTT collects monthly basic charges and registration payments from users. However, if all the dry copper is used for ADSL, then NTT has no way to collect any money. So in this case, the carriers must pay for the maintenance and for operation costs.

**TT:** Some news reports say that the ADSL service will be provided at around 5,000 yen per month. Is this possible?

**Iwasaki:** If the dry copper rental fee is 1,000 yen and the modem rental fee is 1,000 yen, then 3,000 yen is left on the hands of carriers. But the carriers have to retrieve information from the Internet and send it to their own server through their own network. If the job costs 2,000 yen, the profit is roughly 1,000 yen. Since there are some other necessary costs such as the cost for the charging system, the business may incur a deficit. If NTT provides its network and modems at a cheaper rate, then we will be able to provide our services at a lower rate.

**TT:** I heard that TTNet is planning to provide WLL services.

**Iwasaki:** We will launch a WLL experiment in the spring of 2000 using 26 GHz in the cities of Yokohama and Kawasaki. After the six-month experiment, we will

launch commercial services in the summer or autumn of 2000. Since we use a higher spectrum, both terminals and base stations cost more than ordinary systems. So we would like to provide our WLL service at a slightly lower price than optical fiber.

**PHS service**

**TT:** TTNet acquired debt-ridden ASTEL Tokyo last April (1999).

**Iwasaki:** ASTEL Tokyo had 380,000 subscribers as of the end of September 1999. It peaked at 1 million; however, it was defeated by competition from cellular phones. But due to our effort to improve its functionality -- calls tend not to be cut off easily and there is almost no blank area in central Tokyo -- PHS has been regaining its popularity.

**TT:** What is your plan to revitalize PHS?

**Iwasaki:** We are targeting both consumers and corporate users. For improvement of consumer sales, we will market more advanced terminals what we call Super Smooth Extra. With this terminal, calls tend not to cut off even if a caller makes a call from a moving car or train. We will also market a new terminal which has further sophisticated incoming call indication melody known as "chakumero." For corporate users, we will introduce new services such as positioning services with PHS or remote sensing service using PHS for vend-

ing machines and elevators. We are planning to carry out a sales drive in November and December in order to increase our subscription base.

**International telephone services**

**TT:** TTNet launched international telephone services in April 1999.

**Iwasaki:** We launched international telephony services in order to provide our Tokyo Denwa subscribers with total tele-

*It peaked at 1 million; however, it was defeated by competition from cellular phones. But due to our effort to improve its functionality -- calls tend not to be cut off easily and there is almost no blank area in central Tokyo -- PHS has been regaining its popularity.*

phone services, from local, long-distance and international as well as wireless calls. At the moment, both TTNet and DDI Corp. are providing international services at the lowest charges. But since DDI declared that the firm will push down its international call charges further, we are also considering a decrease in our rates.

**TT:** Since NTT Communications Corp. entered the international market, the market became extremely competitive. What is your strategy to cope with such a harsh

situation?

**Iwasaki:** As you know, long-distance and international telephone charges have been falling so rapidly. We are going to put an emphasis on the access line business whose charges have not dropped that rapidly. We are going to provide our services to meet each customer's needs by fully utilizing available access lines including optical fiber, ADSL, WLL and PHS.

**TT:** At the moment, ASTEL Tokyo is using the NTT network to provide its services. Don't you have any plan to switch to the TTNet network?

**Iwasaki:** We are planning on replacing the NTT network with our network in the future. However, we are not intent on replacing it with our current system. We are hoping to introduce the next-generation PHS-based WLL that can provide high-speed data transmission services such as 128 or 384 kbps. We are also hoping to introduce new wireless services using 5-GHz spectrum. But these plans are still in the conceptual stage.

**Profile:**

- 1953: Joined Tokyo Electric Power Co., Inc. (TEPCO)
- 1983: Director of the Board, General Manager of Engineering Department, TEPCO
- 1986: Director of the Board, Senior General Manager of Engineering Department, TEPCO
- 1987: Managing Director, TEPCO
- 1991: Vice President, TEPCO
- 1996: President of Tokyo Telecommunication Network Co., Inc.

**IT Industry News****NEC****Develops Nano-Fabrication Technique for Carbon Nanotubes**

Researchers at NEC Corp. and the Japan Science and Technology Corp.-International Cooperative Research Project (JST-ICORP), have developed a nano-fabrication technique to produce carbon nanotube heterostructures that will enable an era of nanometric-scale electronic devices. The technique is based on smart use of the nature of the materials themselves, through a process of 'solid-chemical reaction'. The research results are reported in the September 10th issue of 'Science' magazine.

Carbon nanotubes were discovered in 1991 by Dr. Sumio Iijima at NEC's Research and Development Group, and one of the co-authors of the report announced on September 10, 1999. The nanotubes have attracted the attention of researchers across a range of fields on a global scale, and have been widely seen as the typical example of nano-structured materials, while their unique properties have been predicted by theoretical calculations. Among the unique properties of carbon nanotubes is their electrically semiconducting nature that makes them similar to silicon, which is the current building block for semiconductor devices. Furthermore, as clarified by research around the world, carbon nanotubes have been found to have a variety of fascinating characteristics including transistor action, extremely high electrical conductivity (comparable to superconductivity), large magnetoresistance, as well as potential for electron field-emitters and mechanical actuators.

To utilize these properties, a tech-

nique needs to be established for forming electrodes on carbon nanotubes for electronic device applications. This requires that the electrode contacts to the nanotubes should be thermally, mechanically and chemically stable. Furthermore, the contact structures have to be formed with atomic level accuracy, which requires an ultimate fabrication technology.

In experimental work reported so far, carbon nanotubes, (A), have been glued directly onto electrodes of a different material, (B). But, without the interface between the materials being properly defined in structural terms, other non-crystalline phases or contaminants, (C), interfere between the materials A and B to form an A-C-B structure.

NEC's newly developed 'sub-nanometer fabrication technique', overcomes this problem, by forming a well-defined crystalline structure (AB) as the interface contact between A and B. Researchers at NEC achieved actual contact between a carbon nanotube and a silicon (Si) substrate by first collecting carbon nanotubes (A) on the surface of a Si substrate (B), and heating it in a vacuum at 900-degrees centigrade. The heat treatment causes a solid-state reaction in the regions between the nanotubes in contact with the Si, resulting in the formation of SiC (AB) in a rod shape in the areas of contact. This reaction occurs under the solid-state diffusion, so that the contact regions almost remain in their original shapes. The contact has a heterostructure of A-AB-B. Knowing SiC is semiconducting, and further assuming that the carbon nanotube is metallic, the contact is a Schottky-type diode.

By eliminating ambiguous contact structures in this way, the material represented by (B) can be chosen according to the desired purpose. Substitut-

ing Si substrate with other materials such as titanium (Ti) or bchniobium (Nb) and performing similar heat-treatment, experiments have confirmed the formation of TiC and NbC rods just as they were obtained with Si. These carbide rods are metallic, and thus a low-resistance ohmic contact is expected that enables device operation at lower voltage and at higher speed.

The research realizes a well-defined crystalline structure for solid-solid interface with atomic-scale abruptness, that promises stable electronic performance of the heterostructures, and potentially enable carbon nanotube electronic devices, ultra-fine wiring in LSIs, as well as low-resistive wiring contacts among, other possibilities. The technique can also be utilized for solid and firm contact between carbon nanotubes with other materials. One example was demonstrated by successfully forming a bundle of single-wall carbon nanotubes on the Ti tip of a scanning probe microscope, which has a curvature radius of several hundred nanometers. The fabricated tips can be used for electron field emitters and direct-writing needles to enable nanometer-scale lithography for future nano-fabrication technology.

**Launch 160Gbps WDM Non-Repeatered Optical Submarine Cable System for Highly-reliable, Large-capacity Backbone Network**

NEC announced that it has launched a Wavelength Division Multiplexing (WDM) based 160Gbps (10Gbps x 16) optical submarine cable system called "SLR160S." NEC will start to deliver the system in March 2000. NEC is the first company in the world to realize more than 300km of long-distance, non-repeatered submarine transmission on 160Gbps WDM system. This system

has the ability to upgrade on 320Gbps(10Gbps x 32).

Recently, due to the expansion of IP networks, projects to construct high-speed and large-capacity backbone networks are being planned all over the world. In the submarine cable systems market, large-scale projects, which object to construct the global network by connecting main cities in each countries, are underway mainly in the Pacific ocean and the Atlantic ocean, and the demand for high capacity transmission systems are increasing. In particular, the non-repeatered WDM submarine cable system is regarded as the most efficient and economical solution for the carrier offering easy maintenance and high reliability.

The new product can be applied for the transmission between center stations and islands, landing points and center stations, and coastal link transmission system as well as the upgrading of existing submarine cable systems. Furthermore, the new product is effective for terrestrial transmission network. NEC will further promote and propose this product not only to the worldwide submarine projects but also to the total transmission network including terrestrial transmission.

The major features of the new product are as follows;

1. High-power booster amplifier and remotely pumped amplifier make it possible to transmit 160Gbps /fiber pair signals over 300km without any repeater.
2. As this is a non-repeatered system, power feeding equipment and repeater monitoring equipment are not required enabling the landing centers to be constructed very economically.
3. The upgrade from 10Gbps to

*Continued on page 3*

# CS Broadcasters Are Being Baptized by Market Principle

By Yaeko Mitsumori

CS digital broadcasting should have brought a dreaming future for both viewers and broadcasting businesses. After two years have past since it was launched with a great fanfare, many CS broadcasters are either forced to give up their channels or forced to halt their broadcasting services. Some small entities such as Open Network Enterprise were either forced to return their license or stop their broadcasting because, the most typically, they failed to collect enough viewers; while some other companies supported by big names such as News Broadcasting Japan and Satellite News were forced to change their channel plan. Some confusion even came from merger of JSkyB and PerfecTV just before JSkyB was scheduled to launch its business.

According to MPT, the government granted license to 108 TV broadcasters since CS digital broadcasting started in the fall of 1996. Among them 10 have not started broadcasting and 13 returned their license to MPT.

MPT used not to allow any broadcasters to withdraw from their business once they enter, partly because they are a type of public service business and partly because the government is responsible for protecting the right of consumers. However, the government seems to have changed its position, and now "letting them go" considering changes in the nature of the broadcasting market.

Each leaving or left broadcaster has its own reason to withdraw or stop airing and is taking different strategy for the future.

Open Network Enterprise last April (1999) returned its license without launching the channel. Masaki Miyoshi, President of the Open Network Enterprise, said he returned the license be-

cause he considered it is too early to launch the planned channel at the moment. He mentioned that he may apply for a new license for the government if MPT invites in the future and if he considers the time is matured. "There seems to be some opportunities to get a license. I would like to determine the strategy using the period fully," he said.

News Broadcasting Japan, a subsidiary of News Corp., returned two licenses -- Chano-yu channel and Fox Document -- in the spring of 1999 and stopped two others -- Fox Family and Star Plus -- in June (1999) as part of its effort to comprehensively restructure its channel strategy. Furthermore, Channel V which used to be specialized on Asian music was changed into only western music program. The firm is now determined to concentrate on Fox Channel which is the main channel for the Fox Group and will gear up its effort to sell the Channel to cable TV operators.

Kyu Interactive, a broadcaster of a local news provider specialized in Kyushu and Okinawa, in May 1999 stopped airing its programs because it failed to get many viewers. As of the end of March 1999, the broadcaster gained merely 400 subscribers. From September 1999 the channel started airing educational programs produced by TAC, a famous pre-school for accountant license spending a half of the airing time while still airing local information using the rest half time. According to the press officer of Kyu Interactive, however, TAC will take over all of the airing time by April 2000. Kyu Interactive initially planned to get 150,000 viewers in three years and turn into black in the same period.

Satellite News, a subsidiary of Nissho Iwai Corp., at the end of June 1999

dropped CTN Chuten, a channel produced in Hong Kong with strong coverage of China affairs and replaced it with BookTV channel. Book TV is produced by Dai Nippon Printing Co., Ltd., a minor shareholder for Satellite News. At the same time, the firm received additional fundings from Nissho Iwai and got rid of 3 billion yen in deficit as part of its effort to improve its financial position. Hideki Sakamoto, President of Satellite News, said that his firm will gear up its effort to sell more ads. At present, the broadcaster relies on advertisement fees merely 10% of all of its revenues. But Sakamoto plans to increase the ratio to 30% by 2002.

Atoss International, a broadcaster specialized on music channel, returned a license in April 1999 without launching the channel. Chiaki Shiromizu, President of Atoss International, said he returned the license because two platforms merged each other just after his firm was granted the license. His firm is airing a program called Music Air Network on both SKY PerfecTV and DIRECTV. He applied for the government seeking for the third license aimed at airing his program on JSkyB. But JSkyB merged with PerfecTV before he gained the license. Shiromizu said that he may seek for another license in the future. "Since we are the content provider, we had better more outlets," he said.

As the number of channels on CS digital expands, the number of subscribers has been rapidly expanding. However, the increasing rate is not so high as it was expected.

Yasushige Nishimura, Chairman of Satellite Broadcasting Association, said that some of CS broadcasters have financial difficulties because production costs are heavier than they had expected.

"We understand that protection of viewers is an important issue, but under the current environment nobody can guarantee any channel will exist for ever," he reportedly said. An MPT official also said they don't have any particular measures to rescue ailing CS broadcasters.

The broadcasting business in Japan was a highly protected, guaranteed business. Since the number of available channels is strictly limited, even when a broadcaster has some financial difficulties, they can easily find out a rescuing hand in any circumstances.

However, since digital technology invaded into the market, things have changed. Digital technology increased the number of channels available and enabled hundreds of companies to run their own channels via satellite. These days, virtually anybody can run their own channels. Many rushed to enter the business. However, they are now forced to reconsider their business plan or even forced to withdraw from their business due to the principle of market economy that they brought in the new market.

One former broadcaster who used to run a BS channel said that he expected that the CS business is more profitable but actually the business was much more tough than he expected.

At the present, withdrawal and stop airing is limited to small business. But in Japan BS services are scheduled to be launched in December 2000 which will expand the number of BS channels from the current three to eight. In addition, two existing CS platforms -- DIRECTV and SKY PerfecTV -- are reportedly negotiating each other to jointly launch their next CS on the East 110 degree and share the platform for their CS services. Further more, DIRECTV is reportedly planning to share the same tuner and antenna with BS services. Then border separating BS from CS will be meaningless. Really tough competition may be triggered. As some market watchers predict that major broadcasters may lose their job in someday in the future.

## NEC:

*Continued from Page 2*

- 160Gbps can be implemented in service without stopping the operation of the system. Upgrade to a 320Gbps system is also possible.
- 4. SDH/SONET interfaces are available for low speed interfaces (Tributary interfaces).
- 5. Optical transmission output 24mW, 250mW, 500mW, 1W are available for high speed interfaces (line interfaces), so they can be selectable in accordance with the transmission distance.
- 6. ITU-T Q3 interface is available for network management, so it can be easily connected with network management system.

NEC places this new product as one of the [Photonic IP Networking] solution. NEC will be heavily involved in marketing this system with the effective combination of other WDM repeated submarine cable systems which have much supply records. The system provides the total network solution integrating with DWDM systems, DWDM ring networks, SDH/SONET optical transmission systems and Carrier-class routers which are already commercialized for terrestrial markets.

NEC anticipates the sales of 20 billion yen in coming 5 years.

## Develops W-CDMA-based Mobile Videophone

NEC Corp. announced that it has developed a prototype of a W-CDMA (Wideband-Code Division Multiple Access) mobile videophone based on the next-generation mobile communications system "IMT-2000." The videophone is a combination of a mobile phone handset with a viewer comprising screen, video camera and microphone.

The third-generation mobile phone system, which is now in the process of standardization, aims to achieve data transmission speeds from 30 to 100 times higher than current rates (384Kbps for mobile, 2Mbps for static). Ultra high voice clarity and mobile multimedia applications including video, large-capacity data and Internet access can all be possible through this system. The W-CDMA system also utilizes frequencies efficiently, allowing more subscribers to share the system.

NEC's prototype W-CDMA based mobile phone handset is a compact and lightweight (120cc, 130g) foldable design. The viewer (240g, 260cc) comprises a small CCD (Charged Couple Device) camera, microphone and 2-inch color TFT-LCD screen. It employs the latest video and audio compression technology (MPEG-4 Visual, H.263 Ver.2, MPEG-4 Audio/CELP (8kHz/16kHz Sampling) and G723.1) to enable the

phone to realize high quality audio and video, Internet access capabilities and large capacity video streaming. In addition, the hands-free function enables users to converse while watching the screen.

To enable wireless connection between the phone handset and the viewer screen NEC is using The Bluetooth technology, the latest standard for short-distance radio communications. The Bluetooth technology works by connecting information terminals using omnidirectional radio signals. The ability to separate the viewer from the mobile phone makes the phone highly portable and convenient for use on the move without connection cables or directional infrared connection. This means that the phone can remain in your pocket whilst the screen and camera are in operation. By separating the phone handset and viewer, the phone is both easier to use and remains highly portable.

NEC will develop its commercial product based upon this prototype. NEC will be demonstrating this prototype, along with W-CDMA network systems at the TELECOM99 and INTERACTIVE99 exhibition, to be held in Geneva, Switzerland from 10 October 1999.

NEC is involved in the development of W-CDMA for NTT DoCoMo in Japan and is at the forefront of developments

in this field. NEC was chosen to supply the W-CDMA network system and handsets for NTT DoCoMo's commercial mobile network. NEC is also actively involved in the field of W-CDMA through the pursuit of technical verification for radio interface and is participating in global standardization activities. Last year alone, NEC established two development companies outside Japan to assist in the research in third-generation mobile communications: Telecom MODUS Limited (England) and NEC Mobile Communications Development Singapore Pte. Ltd. In March 1999, NEC also formed a strategic alliance with Siemens AG for the Third Generation Mobile Telecommunications System to combine the two companies' technological strengths and know-how in this field.

NEC has already been conducting W-CDMA technical trials system with Telephone Organization of Thailand (TOT) and British Telecom.

NEC expects its global development bases, vast experience, and expertise in the field of mobile communications to facilitate the timely introduction of W-CDMA systems and handsets offering sophisticated multimedia features delivering performance and reliability in a cost-effective manner.

## I.T. Industry

# U.S. Internet Ventures: Global Implications

Trends in the U.S., especially for the IT industry based in Silicon Valley, have an especially great impact upon Japanese firms readying to compete by the rules set for them by those already operating on the global market. In addition to large well-known firms, there are many new companies, in particular those involved in the Internet, that have garnered scores of rave reviews from market-watchers. Our roving correspondent, Yaeko Mitsumori, recently visited the U.S. to take a close look at the situation. She filed these reports from California.

### RealNames Corp.

RealNames Corp., based in San Carlos, is now providing Internet keyword services. Using the firm's infrastructure, users are transported to a certain website by typing a real company name or a product name instead of the complex URL. For instance, Sony Corp. has a complicated URL for each product. But by using the RealNames system, users just simply type "Sony Camcorder," for instance, and get the website. The firm is providing its service for individuals, SOHOs and bigger firms with different charging systems. Individual users can receive the RealNames services free of charges. Many big corporations are using RealNames services including Sony Corp. of Japan as well as large American firms such as Fedex, Amazon.com, Disney and Barnes & Noble. In addition, RealNames is working in cooperation with leading suppliers of such search engines as MSN, Alta Vista, GO Network, LookSmart and Inktomi to help improve their directory search results.

Keith Teare, Founder and President of RealNames Corp., said the business provides a win-win situation because all the parties — customers, Internet users and the firm — derive benefits from this system. The U.S. advertising market was reportedly \$180 billion in 1998, and half of it was the direct market. Teare believes there is a \$50 billion potential market for his business.

RealNames Corp. was founded by Keith Teare in 1997. The firm changed the company name from Centraal Corp. into RealNames in August 1999.

### Impresse Corp.

Impresse Corp., based in Sunnyvale, is providing a business-to-business e-commerce network for the purchase and production of commercial print. Siva Kumar, Vice President of Marketing and Cofounder of Impresse, said that Impresse's two new products — Impresse.ware and Impresse.com — will help both sides involved in EC to reduce printing costs and manage the workflow more efficiently. Their products support from the very beginning of the workflow such activities as vendor selection to the very end, including invoicing and payments. They also support both quoted and contract printing jobs. The firm is focusing on large companies and is gearing up sales through a strategic partnership with prominent companies like Hewlett-Packard, WAM!NET and Oracle.

The firm is expecting online print revenues in the U.S. to become \$15 billion in 2001 and online transaction fees to reach \$150 million during the same year. In 2003, these figures are to expand to \$38 billion and \$750 million, respectively. (The printing industry market in the U.S. in 1998 was said to be valued at \$275 billion.)

Impresse Corp. was founded in October 1997 and started its operation in January 1998. It shipped the first product Impresse.ware in March 1999, and the second product Impresse.com in August 1999.

### Preview Systems Inc.

Preview Systems Inc., based in Cupertino, is providing solution for publishers, resellers and distributors to market, sell and distribute digital products over the Internet. The firm is staying behind the scene and is providing technologies to its customers with which they can provide customized services to consumers: with a variety of pricing, payment and volume discount options and trial prior to buying.

Preview's flagship product "ZipLock System" provide customized solution for secure electronic packaging and delivery of digital goods. The ZipLock System

consists of two modular components: the ZipLock Server and the ZipLock Gateway. The ZipLock Server is typically owned by publishers, distributors or clearinghouses. It manages the creation of digital goods and tracks products licenses and sales transaction. The ZipLock Gateway is connected to e-stores and letting reseller keep their own pricing and promotion strategy while maintaining their own brands.

Preview Systems is also providing "PortableStore," a software store on a CD-ROM or DVD or OEM board drive. Customers of PortableStore install software directly from the CD while receiving a license through an online store. But the installed software cannot be used until the purchasing process is done with Preview System's right managing technology.

In Japan, Sony Marketing Japan, a wholly-owned subsidiary of Sony Corp., is selling Preview Systems' products as the exclusive representative in Japanese market. Preview has concluded strategic alliance with other prominent companies such as Ingram Micro, Symantec and others.

Preview Systems' investors include Softbank Venture Capital, France Télécom Innovacom, J. P. Morgan, Olympic Venture Partners et al.

### Commtouch Software, Inc.

Commtouch Software is a provider of web-based email and messaging solution. Commtouch services are unique because it provides private-label email services offered through the websites of major Internet portals, community sites and web-based businesses.

Their services are being provided in 16 languages, reaching 150 nations and a total of 7 million individual subscribers are using the services.

Commtouch recently released a new version of its flagship service ProntoMail which has functions of calendar and scheduling. The ProntoMail 6.0 also has functions of advanced communications center and interactive partner management tools.

Commtouch is providing its services through world leading partners include: NTT (the Japanese telecommunications carrier), ZDNet (affiliated with Softbank Corp. of Japan), Go2Net, Excite, Talk City, Netopia and others.

Commtouch was founded in 1991 in Israel. In 1996, the company moved its headquarters to Santa Clara. At the moment, the firm has offices in Santa Clara, New York and Ein Vered, Israel. Isabel Maxwell, President of Commtouch, said she hopes to open an office in Tokyo "very soon."

### MediaFlex.com

MediaFlex.com is a provider of Internet print ordering systems and e-commerce solutions for the digital printing industry. MediaFlex's products — Online Print Center (OPC), Corporate Image Center (CIC) and Online Control Center (OCC) — support all aspects of e-printing from ordering, processing to final invoicing and distribution. Unlike Impresse, MediaFlex is targeting small to medium-sized printing vendors.

The OPC is the core solution. With the OPC, print providers can create, manage, distribute, process and fulfill on-demand print orders. The CIC has two functions: printers can set-up image centers for specific customers; and customers can update and customize digital files.

The OCC takes care of back-end management of ordering process. Bill Rollinson, President and CEO of MediaFlex, said by using their products, not only print vendors can reduce paperwork, ordering errors, storage problems but print inventory and project management costs as well.

The firm estimates the digital printing market will

expand from \$13.3 billion in 1998 to \$35.1 billion in 2003 while the total printing industry expands from \$105 billion to \$130 during the same period.

MediaFlex.com, based in Santa Clara, was founded in May 1997 by Bill Rollinson. The firm has recently released a new version of its flagship product Online Print Center 2.0

### Valicert Inc.

ValiCert Inc. is the leading supplier of software and services for validating digital certificates.

A validation authority (VA) is a system for checking the validity of digital certificates issued by a certification authority (CA) to ensure the certificates have not been revoked.

Alexander Garcia-Tobar, Vice President of International Affairs of ValiCert, explained the necessity of validation: "The Public Key Infrastructure (PKI) is becoming the necessity of many organizations' security strategy. Digital certificates are the core components of a PKI solution because they verify the identity of a user or an organization involved in an Internet-based transaction or communications. However, these credentials can fall into unauthorized hands, or become revoked if an employee leaves an organization." He discusses ValiCert's VA products can provide enterprise-class certificate validation solutions for secure e-commerce and communications.

ValiCert recently released the third-generation of its flagship product ValiCert Enterprise VA v.3.0. The ValiCert Enterprise VA is a server that acts as a digital certificate VA and hosts certificate revocation data for both internal and external queries. It consists of ValiCert VA Publisher, ValiCert Validator Suite and ValiCert Validator Toolkit. ValiCert Enterprise VA is being used by ABN-AMRO Bank, Sun Microsystems, Identrus and others. NTT Communications, the Japanese international and long-distance carrier, is a member of the ValiCert Affiliate Program.

ValiCert, based in Mountain View, was founded in 1996. The firm recently opened its European office in Amsterdam, the Netherlands.

### NetScreen Technologies Inc.

NetScreen Technologies Inc. is providing integrated Internet security solutions for e-business sites, broadband service providers and high-traffic enterprise networks.

The remarkable feature for the firm is that it is providing hardware solution integrating firewall, virtual private networking (VPN) and traffic shaping (QoS). David Flynn, Vice President for Marketing, explained that Netscreen's ASIC-based hardware solution is much faster and more powerful alternative to software-based solution offered by CheckPoint and Cisco. The firm's one of the two first products is NetScreen 100 which delivers wirespeed 100 Mbps firewall, VPN and traffic management functionality for e-business sites, enterprise networks and service providers. The other one, NetScreen 10 delivers 10 Mbps full-feature security for medium sized enterprises, branch offices and departments.

In September 1999 the firm released two new products: NetScreen 5 and NetScreen Global Manager. NetScreen 5 supports up to 10 users and delivers wirespeed 10 Mbps 3DES IPsec encryption. NetScreen Global Manager is software solution for managing multiple NetScreen Internet security appliances. With this solution, service providers can monitor up to 1,000 NetScreen appliances at once.

The firm is planning to release NetScreen 1000, the highest-level product of the family very soon.

In Japan, Hitachi handles these NetScreen products. NetScreen Technologies was founded in 1997 by three Chinese who have educational and professional background in the U.S. The firm's investors include Sumitomo Corporation and Hitachi Seibu Software. The firm shipped first two products NetScreen 10 and NetScreen 100 within nine months after incorporation. NetScreen is headquartered in Santa Clara, California.

## ADSL

# NCCs and ISPs to Fund a New Venture for Launching ADSL Services in Japan

by Yaeko Mitsumori

Eighteen Japanese companies including all the major NCCs and ISPs established an association in order to launch high-speed data transaction services utilizing asymmetric digital subscriber line (ADSL) technology. Those firms are planning to establish a joint firm by the end of 1999 at the earliest and will launch ADSL services by the end of 2000.

The new joint venture is going to lease unused subscribers' lines (dry copper) from NTT and will provide the infrastructure for ADSL services to its member companies. Using the infrastructure, these NCCs and ISPs will provide communications services to their end-users, mostly consumers. The retail prices have not been decided yet. However, some news reports said if NTT leases its dry copper at 1,000 yen per month, then carriers can provide the ADSL service at 5,000 yen per month.

ADSL is a type of technology realizing high-speed data transmission by using existing twisted pair cables from the telephone carriers central office to the subscribers' premises. It uses electronic equipment in the form of ADSL modems at both the central offices and the subscribers premises.

The participating companies include major NCCs such as DDI Corp., KDD Corp. and Japan Telecom

Co., Ltd. as well as major ISPs such as Fujitsu Ltd., NEC Corp. and Matsushita Electric Industrial Co., Ltd.

Ryuichi Kamoshita, Manager of Internet Project Section of Mitsui & Co., Ltd., a lead company for the association, said that by jointly procuring ADSL modems and other devices while establishing and operating the infrastructure, carriers and ISPs will be able to launch the new services at lower prices in nationwide areas.

In a separate interview, Katsumi Iwasaki, President of Tokyo Telecommunication Network Co., Inc. (TTNet) said that the carriers may not share the same platform or system because each firm has different service systems and strategies.

Kamoshita said that the association is going to select vendors for ADSL modems and other equipment not limited to these member companies. He suggested that the association may use not only modems based on Japanese specification, but also European and U.S. spec modems for the experiment.

The association on October 25 submitted an opinion paper to MPT in which they said ADSL is not a tentative technology to fill up time until deployment of optical fiber, but an important access technology for vitalizing the Internet market. The association also

requested publicly that NTT provide their copper lines with free of charges to them because NTT subscribers are already paying the cost for using the copper lines.

Compiling public comments from the association and others, MPT is scheduled to decide upon the technical requirements for experimental ADSL services early November (1999).

MPT is scheduled to compile the final report in the spring of 2000 and will decide upon the technical requirements for commercial services in the summer of the same year.

Mitsui kicked off negotiations with NTT over the dry copper cable lease fees. Kamoshita of Mitsui said that it is totally up to NTT's lease fee for them to provide inexpensive ADSL services. "To meet consumers' strong demand for inexpensive communications services, we keenly hope that NTT will provide their infrastructure at a lower rate," he said.

NTT East and NTT West are planning to launch ADSL services in December 1999 on an experimental basis. In the one-year experiment, they will provide ADSL service with 500 kbps for downstream and 200 kbps for upstream using ADSL modems developed by NEC. NTT has not released service prices. Some other firms are planning to launch flat-rate data communications services.

Tokyo Metallic Communications Co., Ltd., a venture company, is planning to launch flat-rate communications services using ADSL technology in cooperation with KDD in November 1999. Service prices are believed to be 5,500 yen for consumers and 30,000 yen for corporate users.

Tokyo Electric Power Co., Inc. (TEPCO), Microsoft Corp. and Softbank Corp. in September (1999) established "Speed Net." The firm will in August 2000 launch high-speed (higher than 1 Mbps) data communications service at several thousand yen per month.

## IT Industry News

### NTT

#### Launches of MIRANet, a Test of the Network of the Future

Nippon Telegraph and Telephone Corp. will launch a research and development effort on an information sharing network, "adaptive network," based on a completely different concept from traditional networks. An adaptive network is one that responds flexibly to changes in the demand by users for a wide variety of services, and to the rapidly changing demand for communications. It is a network whose functions and configuration dynamically evolve. Beginning in October 1999, an experiment, called the MIRANet, will commence. Its purpose will be to test the effectiveness and feasibility of an adaptive network, and it will tie together three research and development facilities -- in Yokosuka, Atsugi, and Musashino -- with a state-of-the-art photonic network.

NTT will gradually introduce in the market the results of the research done on MIRANet. NTT will seek to achieve a natural and easy-to-use communications environment that will expand the ability of the user to gather and understand information, and it will enhance their capabilities of self-expression and their capabilities to communicate.

#### (1) Background

As symbolized by the quick penetration of the Internet into our lives, NTT is embarking on what is being called the age of the "information sharing society," in which a variety of information is distributed across the network. This phenomenon is grounded in recent advances in computer and data communication technologies, and it is the product of rapid advancements in the computerization of social and economic activities.

The services being provided over the network are growing in complexity and diversity, while the level of knowledge and procedures required of users to make use of the network and to access its information is also rising and becoming increasingly complex. There is an information gap that has arisen between individuals with network and computer knowledge and those without, and that gap is becoming a real problem. Unlike in the prior telephone-centered era, the ways in which the network is utilized and the diversity of services have rendered accurate forecasts of communications traffic impossible. Network operators must

take steps to speedily accommodate the many new services, which are making their appearance in rapid succession. At the same time, they must make effective use of network resources, and reliably provide services that meet the rapid changes in the traffic.

#### (2) NTT's Next Generation Network Solution, the Adaptive Network

It is NTT's belief that in the coming information sharing society, anyone should be able to exchange multimedia-based information freely and easily, without any sense of place, time, or distance, or even being aware of the existence of the network itself. In other words, the user should not have to adjust himself or herself to the needs of the network. Rather, the network should respond immediately to the user's own environment, which is diverse and speedily mutating, and to changes in the user's demand for services. It should provide a natural and pleasant environment in which communication can take place, and it should aid in extending the user's ability to gather and understand information, and enhance their capabilities of self-expression and their ability to communicate. It will also be necessary that the configuration of the network, and the functions of the network equipment itself, change dynamically to be able to incorporate new services, and absorb changes in traffic at the macro level.

NTT seeks to respond instantaneously to changing conditions. NTT sees the adaptive network, which can freely alter its functions and configuration, as the network infrastructure that will support the coming information distribution-based society. To realize that vision, NTT is engaged in research and development of a variety of fundamental, leading-edge technologies.

#### (3) Characteristics of the Adaptive Network

At NTT, three key concepts are used to describe the adaptive network: Intelligence, evolution, and simplicity/seamlessness.

The network has intelligence, and supports the user in all aspects of his or her social activities. For example, it understands not only the user's demands, but also his interests and his environment. It then provides appropriate value-added information and services on a timely basis. Furthermore, the network supports the settings for connecting the user's terminal to the network, as well as automatic updating of its functions. Several types of technologies make that sort of network possible: Technologies for compre-

hending the user's environment, technologies for locating network resources and providing an appropriate mix of those resources, and technologies for automatic updating of the functionality of the user's terminal equipment.

Through the use of programmable hardware, the network causes its configuration and functions to autonomously evolve. That will render it unnecessary to install additional communication equipment and new interfaces when implementing new services. NTT's goal is to provide timely new services with only about twenty or thirty percent of the investment in equipment and time that used to be required. NTT also seeks to build an economical broadband network that makes effective use of network resources. The network will accomplish that by absorbing extreme, unpredictable changes in traffic through dynamic network reconfiguration, and implementing load distribution by modifying in real time the functions of the communications equipment to cope with concentrated bursts of service requests to the server. The enabling technologies for that include network operation technologies employing autonomous distribution control, and techniques for autonomous modification of network functions using programmable hardware.

NTT will be able to provide network services that cross the boundaries of fixed, mobile and satellite media through the use of a very high-capacity core transport network in the terabit (one trillion bits) per second range, and a combination optical-wireless user access network. Through a combination of the technologies of real-time network function and configuration modification, NTT seeks to achieve a network capable of providing bidirectional access in the 100Mbps class under a variety of usage conditions, for approximately 10,000 yen per month. The technologies necessary to attain that level of service include adaptive photonic networking, very high-capacity optical transmission, self-replicating wireless networking, and high-speed wireless transmission technology.

#### (4) Launching MIRANet, an Experimental Adaptive Network

To verify the effectiveness and feasibility of an adaptive network, a test of MIRANet will begin in October of this year. It will link three research and development facilities in Yokosuka, Atsugi, and Musashino using a leading-edge photonic network now in development at NTT research laboratories.

*Continued on Page 7*

## Rep. Yashiro Appointed MPT Minister and Reps. Kosaka and Maeda Appointed State Secretaries

On October 5, 1999, in line with the reformation of the Obuchi Cabinet, Mr. Eita Yashiro, a member of the House of Representatives, was appointed Minister of Posts and Telecommunications. On the same day, Mr. Kenji Kosaka and Mr. Tadashi Maeda, also members of the House of Representatives, were appointed State Secretaries for Posts and Telecommunications.



**Personal Careers**  
Eita Yashiro: Minister of Posts and Telecommunications

Rep. Yashiro was born on June 2, 1937 in Yamanashi Prefecture and graduated from Isawa High School.

He was first elected to the House of Councillors in 1977 and appointed State Secretary for Science and Technology in 1985. He was also elected to the House of Representatives in 1996.

• Former Positions in the House of Councillors

Chair, Standing Committee on Labour and Social Policies; and Director, Standing Committee on Labour and Social Policies

• Former Positions in the House of Representatives

Chair, Standing Committee on Judicial Affairs; and First Director, Standing Committee on Judicial Affairs

## IT Industry

### Fujitsu

#### French Atomic Energy Commission Orders Fujitsu VPP5000 Series Supercomputer

Fujitsu Ltd. announced that it has received an order from the French Atomic Energy Commission, (Commissariat à l'Energie Atomique, CEA) for its latest generation VPP5000 Series supercomputer. The order affirms that the excellent scalability and unrivalled sustained performance of the Fujitsu VPP Series are widely recognized in the

market.

Offering peak performance of 144Gflops, the VPP5000 supercomputer ordered by CEA will be delivered to its civil research center in Grenoble in November 1999 and will replace the center's current Fujitsu VPP300E system. CEA will use the VPP5000 for a variety of research activities, such as the development of applications in the areas of energy, industry, research, healthcare, environmental protection, etc.

Mr. Alain Hoffmann, Director of Computing for CEA, said, "CEA chose the

VPP5000 after a call for procurement for its new vector supercomputer, during which the VPP5000 showed the highest sustained performance and performance/cost ratio over representative CEA applications. We were also impressed by the excellent support available from the Fujitsu team in France. We are convinced that the VPP5000 will satisfy CEA's increasing computing demands towards the new century, and that it is an ideal machine with the high scalability required for possible future expansion of the system."

Successor to the VX/VPP300/VPP700 series, the VPP5000 is Fujitsu's newest generation high-performance vector parallel supercomputer series and provides the highest performance in the world. The parallel architecture of the VPP5000 Series realizes scalable computing performance with configurations ranging from a single processor to a maximum of 512 processors.

Each processor utilizes the industry's most advanced low power consuming CMOS (Complementary Metal Oxide Semiconductor) technology LSIs and SDRAM memory units. The maximum performance of each processor is 9.6 Gflops, the fastest performance of any CMOS-based processor in the world.

Fujitsu has delivered a total of approximately 400 vector supercomputers throughout the world, of which 152 are in the VX/VPP300/VPP700 series. More than 30 VPP Series systems have already been installed throughout Europe.

### Hitachi

#### Releases Industry's First 512-Mbit Synchronous DRAMs

Hitachi, Ltd., on September 9, 1999, announced the industry's first 512-bit synchronous DRAMs (SDRAMs)-the

HM5251165BTD Series (x16-bit configuration), HM5251805BTD Series (x8-bit configuration), and HM5251405BTD Series (x4-bit configuration)-for use as main and expansion memory in personal computers, workstations, servers, and similar products. Sample shipments will begin in October 1999 in Japan. These new products employ Hitachi's proprietary stacking technology to achieve integrated molding of two 256-Mbit SDRAM chips, enabling the chips to be housed in the same 54-pin, 400-mil TSOP-II package as a 256-Mbit SDRAM. Future plans include the development of a model offering 133 MHz memory bus (PC133) support.

#### Releases a Super Technical Server Providing the World's Fastest Processing Power

Hitachi, Ltd., on September 16, 1999, announced its intention to release worldwide the enhancement model of "SR8000 Series," the "Model F1," beginning from September 20. This is an addition to the lineup of the super technical servers created by the Information & Telecommunication Systems.

The Model F1 provides the world's fastest processing capability of up to 6.1 teraFLOPS (TFLOPS). The maximum processing capability per system of the "SR8000 Series" ranges from 32 gigaFLOPS (GFLOPS) to 6.1 TFLOPS, thus providing broad scalability.

Toward the 21st century, the scope of application of the computer for scientific and technical research is expanding from the fields of structural design and fluid dynamics, to areas related to weather forecast, new materials development, molecular synthesis, oil exploration, the life sciences, image processing and space engineering.

### 2000 Budget:

*Continued from Page 1*

which the government plans to develop is intending to connect all of the devices at offices and at home with each other. The government is intending to develop a system which can transmit data at a speed of 30,000 times faster than the present Internet by 2010. The U.S government in February 1999 announced the IT Square project. Sakurai said that MPT is planning to develop Japanese version of IT square. "The present Internet system can connect merely 2% of all of the devices; but the futuristic Super Internet will be able to connect any devices," he said.

- R&D on Internet Compatibility with the Computerized Home: 2 billion yen

The government is going to develop consumer electronics which have Internet connectivity and a variety of applications for such a system. In cooperation with some consumer electronics manufacturers such as Matsushita and NEC, MPT will develop consumer electronics, the interface of such devices and applications. Recently, some consumer electronics manufacturers have developed Internet refrigerators and Internet microwave ovens. However, to explore usage of these devices, manufacturers need to conduct large scale experiments.

- R&D on ITS local Pilot System: 1 billion yen

This is a joint project with MITI. MPT, in cooperation with MITI, will promote tourism and recreation information delivering system for automobiles. For the year 2000, they are plan-

ning to conduct demonstration experiments in a dozen cities around the country. NEDO (New Energy and Industrial Development Organization), a quasi governmental organization under MITI, and Telecommunications Advanced Organizations (TAO), an organization under MPT, will actually execute the project. ITS is a national project which five ministries and agencies are currently promoting. They are scheduled to develop a wide variety of systems by the year 2005.

- Study of a Bill on Electronic Signatures and Authentication

In an effort to promote implementation of electronic commerce, MPT, in cooperation with MITI and the Ministry of Justice, is going to legitimate electronic signatures. They are planning to develop a system which will be comparable with ones in foreign countries and will be mutually recognized with other nations. The government is scheduled to submit the bill to the next Ordinary Diet session.

- Development of the Government Public Key Infrastructure (GPKI): 500 million yen

The government is planning to establish the Government Public Key Infrastructure (GPKI) under the leadership of the Management and Coordination Agency (MCA), targeting at the beginning of the 21st century. The GPKI is the system which validates genuineness of electronic authentication by the government. MCA is going to work out the basic validation system and other ministries are going to develop the specific part of the GPKI to meet the specific demands for each ministry's business.

MITI and the Ministry of Justice also requested certain budget for developing the GPKI.

Other new projects included in the fiscal 2000 budget request are:

- Support of Venture Business
- Enhancement of the Angel Tax System
- R&D on Cooperation between Industrial and Academic Sectors
- Research on policy on illegal and harmful information rating system
- Promotion of accessibility
- Promotion of introduction of IT in education

#### Outline of FY2000 Budget Request (Interview with Shun Sakurai, Director, Policy Division, Communications Policy Bureau, MPT)

TT: Why will MPT put an emphasis on the Millennium Project?

**Sakurai:** Under the leadership of Prime Minister Keizo Obuchi, the government is going to promote the Millennium Project in cooperation with the industry and the academy. As a ministry in charge of telecommunications, MPT is going to promote IT projects putting an emphasis in the following five fields:

1. Building an IT infrastructure suitable for the 21st century
2. Promotion of ITS
3. Construction of the electronic government
4. Introduction of IT in Education
5. Promotion of the global environ-

ment using IT technology

TT: You have mentioned that the IT-related budget is quite limited.

**Sakurai:** Under the strict policy of zero ceiling, IT budget has been expanding. For instance, our FY2000 BUDGET Request for IT projects have expanded by 25% from the FY1999 budget. However, still the budget itself is quite small compared with conventional budgets for, for instance, public construction projects. We hope the (IT-related) budget will expand further.

TT: The Minister Posts and Telecommunications reportedly said that she hopes to put an emphasis on certain areas such as SOHO, accessibility, and introduction of IT in education.

**Sakurai:** Right. Taking that into consideration, we worked out this budget request.

TT: What is the future direction of the business of MPT?

**Sakurai:** Our Policy Division has dual responsibilities: Our division is in charge of promotion of Internet project, which is absolutely one of the most important projects toward the next century. We will gear up our effort to promote the project. Especially in the area of Internet, gaps between the United States and Japan have been widening further. We keenly feel we should reclaim the gaps. At the same time, we are responsible for making the entire budget request of MPT and promoting all of the projects at MPT. We will make all effort to promote all of the projects.

**NTT:***Continued from Page 5*

The photonic network is capable of carrying optical signals with tens of differing wavelengths in a single fiber, and it can route the signals in optical form at the nodes in accordance with the information provided by their wavelengths. MIRAnet is now testing various advanced fundamental technologies with the aim of bringing about adaptive network services based on this very high-capacity and flexible photonic network.

**NTT Amends Projected Non-Consolidated and Consolidated Financial Results for FY 2000**

1. Nippon Telegraph and Telephone Corp. (NTT) has amended its projected non-consolidated financial results for FY 2000 (April 1, 1999 through March 31, 2000), which were announced on May 26, 1999, as follows:

*Projected Financial Results for FY 2000 (Non-Consolidated) (millions of yen)*

	Operating revenues	Recurring profit	Net income
Before amendment	1,701,000	93,000	77,000
After amendment	1,701,000	112,000	93,000

\* Net income adjusted for previous fiscal year tax benefit

2. Reasons for the Above Revisions  
NTT originally projected operating revenues of 1,701,000 Million yen recurring profit of 93,000 Million yen and net income of 77,000 Million yen for FY 2000. The projections have been revised based on the situation of revenues and expenditures for the quarter from April 1, 1999 through June 30, 1999 (period prior to the July 1 reorganization of NTT).

3. Based on the item 2 above and the performance forecasts made for Nippon Telegraph and Telephone East Corp. (NTT East) Nippon Telegraph and Telephone West Corp. (NTT West), and NTT Communications for FY 2000, the forecast (consolidated basis) for the business performance of NTT for FY 2000 (April 1, 1999 through March 31, 2000) announced on May 26, 1999 with the release of NTT's performance in FY 1999 (ended March 31, 1999) is hereby revised as follows.

*Projected Financial Results for FY 2000 (Consolidated)*

	Operating revenues	Recurring profit	Net income
Before amendment	10,236,000	713,000	-133,000
After amendment	10,333,000	713,000	-128,000

\* Net income adjusted for previous fiscal year tax benefit

**Nippon Telegraph and Telephone Corp.  
Matsushita Electric Industrial Co., Ltd.  
Matsushita Communication Industrial Co., Ltd.  
NTT and Matsushita Group Agrees to Work Jointly on FTTH Trial Project in Kanazawa**

Nippon Telegraph and Telephone Corp. (NTT), Matsushita Electric Industrial Co., Ltd. (MEI), known for its Panasonic brand products, and Matsushita Communication Industrial Co., Ltd. (MCI), MEI's telecommunication subsidiary, have reached an agreement to work together on a trial project

for information sharing business utilizing FTTH(Fiber to the home) technology. The trial project is called the FTTH Kanazawa trial, and will be deployed for one year from April 2000 in the city of Kanazawa in Ishikawa Prefecture.

The FTTH Kanazawa trial will be conducted as a part of the building of an information sharing system. Such systems are expected to show strong growth in the future. The aim of the trial is to cooperate to make use of the features of optical network services and to implement a community-oriented information sharing business using information appliances. It is believed that the results of the test of the FTTH Kanazawa trial will greatly contribute to improvement of living in the community, as well as to invigorate the information sharing market.

The FTTH Kanazawa trial project will consist of joint study of how to build a business that will provide a mechanism for the distribution of information through the development of a system for an information sharing service center based in the community.

Especially, Hokuriku Matsushita Life Electronics Co., the local sales company of Matsushita products, will serve as the information sharing service center which is the base for transmitting the living information. NTT will make maximum use of the existing fiber network, and it will also build an optical local area network (maximum speed: 10 Mbps) interconnect the trial participants and the information sharing service. In addition, NTT and the Matsushita group will together provide lifestyle information using the optical network and information appliances, and develop services. The companies will also conduct tests to determine the conditions under which the user interface, the network, and the information appliances can achieve consistent and harmonious interoperation. The trial participants will be able to make use of medium- and high-speed Internet access services.

In the future, based on the results of the FTTH Kanazawa trial project, it is to expand the offerings beyond the local community to form a large information sharing market providing nationwide services, and to create a new information sharing market rooted in communities throughout Japan.

**NTT DoCoMo Establishes U.S. Subsidiaries**

NTT Mobile Communications Network, Inc. ("NTT DoCoMo") will establish U.S. subsidiaries in California's Silicon Valley in early November 1999. The subsidiaries will consist of two companies: NTT DoCoMo USA, Corp. ("DoCoMo USA"), which will serve as a holding company in the U.S., and DoCoMo Communications Laboratories USA, Inc. ("DoCoMo Laboratories USA"). DoCoMo USA will be established as a wholly owned subsidiary of NTT DoCoMo, and DoCoMo Laboratories USA will be wholly owned by DoCoMo USA.

(Note: Names of both subsidiaries are tentative.)

NTT DoCoMo has decided to set up a U.S. operation to promote the globalization of the IMT-2000 next-generation mobile communications system, as well as strengthen its Internet-related technologies.

DoCoMo USA will manage and coordinate the parent company's venture investments and R&D activities in the

United States, while DoCoMo Laboratories USA will serve as an R&D center that will explore new mobile Internet and advanced software development technologies, as well as adapt existing technologies.

Outline of new companies

1. Location: Silicon Valley, California, USA
2. Capital and Shareholder:
  - i) NTT DoCoMo USA, Corp.  
Capital: 8 million US\$ (1million US\$ for NTT DoCoMo USA, Corp. as a single entity, 7 million US\$ for DoCoMo Communications Laboratories USA, Inc.)  
Shareholder: NTT Mobile Communications Network, Inc. (100%)
  - ii) DoCoMo Communications Laboratories USA, Inc.  
Capital: 7 million US\$  
Shareholder: NTT DoCoMo USA, Corp. (100%)
3. Presidents (tentative)
  - i) NTT DoCoMo USA, Inc.: Masaki Yoshikawa
  - ii) DoCoMo Communications Laboratories USA, Inc.: Toshio Miki
4. Others: Following the establishment of DoCoMo USA, DCM Investment, Corp. (established in March 1996), currently NTT DoCoMo's wholly owned U.S. subsidiary, will be wholly owned by DoCoMo USA.

Outline of DCM Investment, Inc.

1. Establishment: March 1996
2. Capital: 20.12 million US\$
3. Shareholder: NTT Mobile Communications Network, Inc. (100%)
4. President: Ayami Hidaka
5. Location: Boston, Massachusetts, USA
6. Business: Investment in telecommunication-related companies and venture funds

**NTT DoCoMo to Test Mobile Media Distribution Service**

NTT Mobile Communications Network, Inc. (NTT DoCoMo) will soon begin testing its new Mobile Media Distribution (MMD) Service for distributing musical content. The service will be tested on NTT's PHS 64kbps data communications network. To this end, NTT DoCoMo recently concluded agreements with:

1. Matsushita Communication Industrial Co., Ltd., which will form a joint venture with NTT DoCoMo to conduct field trials of the MMD Service.
2. Sony Corp., which will jointly test the MMD service.
3. IBM Corp., which will jointly test the MMD service.

The MMD Service allows users to gain access to songs, concert schedules and other music-related information anywhere and at any time by downloading them from record companies, music publishing houses and other content holders. The content holders can also use the service for marketing and promotional purposes. The test will start from April, 2000. NTT DoCoMo will also study the possibility of further extending the MMD Service to W-CDMA that is scheduled to be commissioned in Spring 2001. In advance of the testing, NTT DoCoMo and record companies have set up the MMD Service Workshop to discuss various methods for using cellular and PHS phones to expand and revitalize the music market in this October.

**NTT Com**

**NTT Com, PLDT and FPC Sign Agreement on Investment in PLDT**

NTT Communications Corp. (NTT

Com), Philippine Long Distance Telephone Company (PLDT) and First Pacific Co., Ltd. and certain of its affiliates (the FPC Group) signed an agreement concerning NTT Com's investment in PLDT, the Philippines' largest telecom carrier. The transaction involves the exchange of the shares of Smart Communications Corp. (Smart) held by NTT Com and by members of the FPC Group for newly issued shares in PLDT and an additional investment by NTT Com in PLDT for cash.

A memorandum of understanding on the transaction was agreed on June 4. In addition to the agreement on the investment, agreement in principle has now been reached on the following commercial matters, which will go into effect when the investment closes: 1) PLDT and NTT Com will coordinate between themselves regarding international telephone traffic services with a view to maximizing revenue generated from such services. 2) PLDT will offer Arcstar services to customers in the Philippines. 3) NTT Com and PLDT will cooperate on providing Internet transport capacity and Internet-based services. 4) NTT Com will send advisors to PLDT to contribute their technical and management expertise on a day to day basis. NTT Com will also have representation on PLDT's board and management committees.

Details of the investment agreement are as follows:

Major Items

- 1) NTT Com will exchange all its shares in Smart (representing about 37% of Smart's total outstanding common shares) for newly issued common shares of PLDT and will make an additional investment in PLDT for cash.
- 2) In exchange for its Smart shares NTT Com will obtain approximately 7.8% of the common shares of PLDT after the closing of the transaction.
- 3) NTT Com's additional (cash) investment for newly issued PLDT common shares will be approximately 14.7 billion pesos (approximately US\$361 million or ¥37.6 billion at \$1 = 40.7 pesos = ¥104.2\*) for which NTT Com will obtain approximately 7.2% of PLDT's common shares after the closing of the transaction. (\*exchange rates: as of September 27, 1999)
- 4) NTT Com's aggregate holding in PLDT after the closing of the transaction will be approximately 15%.
- 5) NTT Com's current investment in Smart is approximately 13.1 billion pesos (approximately US\$372 million or ¥40.0 billion, according to prevailing exchange rates at the time of purchase). After the closing of the PLDT transaction, NTT Com's total investment in PLDT will be approximately 27.8 billion pesos (approximately US\$733 million or ¥77.6 billion).
- 6) NTT Com will be able to nominate two PLDT directors
- 7) Subject to the approval of the Philippine regulatory agencies, including the Philippines Securities and Exchange Commission and National Telecommunications Commission, and subject to completion of the purchase of shares of Smart from certain minority shareholders, Smart will become a wholly owned subsidiary of PLDT after the exchange of NTT Com's and the FPC Group's Smart shares. Therefore, NTT Com will continue to have an interest in Smart through its holding in PLDT.

## Statistics

### Records of Telecom Equipment (As of April 1999)

#### Production

Type	Apr. '99		Compared with Apr. '98 (%)
	¥1 Mil.	Sets	
<b>Telecom Equipment</b>	<b>270,072</b>		-3.7
<b>Terminal Equip.</b>	<b>152,495</b>		8.1
Wire Telecommunications Equip.	34,279		-29.1
Telephones Sets	4,934	663,946	-57.1
Standard Type	510	55,303	-16.8
Functional Type	428	142,800	-60.5
Wireless Phone	3,797	464,083	-56.7
Others	199	1,760	-81.0
Telephone Application Equip.	11,263		-12.3
Key Telephone Systems	4,447	226,340	-41.8
Small Capacity	455	21,737	-20.5
Medium/Large Capacity	3,992	204,603	-43.6
Telephone Auxiliary Equip.	101	12,085	-58.1
Interphones	3,431	359,326	-13.2
Others	824		-18.0
Telegraph & Picture Transmission Equip.	18,082		-24.6
Facsimile	17,207	374,453	-25.9
Super High-Speed Facsimile	162	3,192	-33.1
High-Speed Facsimile	16,448	368,742	-26.2
Other Facsimiles	597	2,519	-13.4
Others	875		14.8
Mobile Terminal Equip.	118,216	4,642,242	27.4
Land	115,942	4,613,295	28.5
•Automobile	148	14,113	-90.0
•Portable	105,555	4,015,794	37.3
•Pager	469	26,532	-78.5
•MCA	40	852	-87.1
•Public PHS Terminal	6,387	353,906	1.0
•Others	3,343	202,098	10.9
Maritime and Airplane	2,274	28,947	-11.2
Personal Radios (900 MHz)			-
<b>Network-Related Equip.</b>	<b>114,744</b>		-15.2
Wire Network-Related Equip.	97,700		-16.4
Switching Equip.	39,859		-25.8
Electronic Switches	27,605		-27.5
For Telephone Offices	20,162		-26.7
For PBX	7,443		-29.8
Other Switching Equip.	12,254		-21.5
Carrier Equip.	57,841		-8.3
Code Transmission Equip.	38,848	9,000	-5.0
MODEMs	3,725	13,439	7.7
Others	15,268		-18.5
Mobile-Related Network Equip.	16,714	19,062	-9.6
Fixed Station Communications Equip.	8,848	1,771	-15.5
Terrestrial	8,103	1,499	-6.3
Satellite	745	272	-59.0
Base Stations	7,866	17,291	-1.9
<b>Wire Telecommunications Parts</b>	<b>2,833</b>		-30.1
Relays (1,000 units)	2,618	39,216	-31.9
Other Components	215		4.9

#### <For Reference>

Type	Apr. '99		Compared with Apr. '98 (%)
	¥1 Mil.	Sets	
<b>Broadcast Equip.</b>	<b>10,110</b>	<b>1,584</b>	333.9
<b>TV Camera</b>	<b>7,361</b>		-34.1
<b>Radio Application Equip.</b>	<b>1,861</b>	<b>3,915</b>	-27.6
Radar Equip.	2,205	7,509	-56.8
Radio Measuring Equip.	3,295		-5.8
Others	1,422	628	13.9
Telemetry/Telecontrol Equip.	1,873		-16.8

Remarks: 1) Data are based on the Statistics of Actual Production by the Ministry of International Trade and Industry (MITI).

2) Radio Communications excludes the citizen band transceivers and the amateur telecom equipment.

Source: Communications Industry Association of Japan

#### Export

Type	Apr. '99		Compared with Apr. '98 (%)
	¥1 Mil.	Sets	
<b>Telecom Equipment</b>	<b>47,602</b>		-19.5
<b>Wire Telecommunications Equip.</b>	<b>41,044</b>		-15.8
Telephones	1,913	221	-44.5
Cordless Telephones	1,203	123	-49.0
Other Types	710	98	-34.7
Telephone Application Equip.	1,098	35	90.4
Key Telephone Systems	332	3	15.6
Automatic Answering Telephone Sets	91	1	-17.2
Intercoms	216	29	78.5
Others	459	2	681.2
Telegraph and Picture Transmission Equip.	6,701	177	-45.6
Facsimile Equip.	6,701	177	-45.6
Teleprinters	0	0	0.0
Others	0	0	0.0
Switching Equip.	1,530	10	-69.2
Carrier Equip.	3,909	41	26.9
Components	25,893		6.3
<b>Radio Communications Equip.</b>	<b>6,558</b>	<b>263</b>	-36.8
Transmitter and Transmission/Receiving Equip.	5,859	150	-31.9
For Long/Medium/Short Waves	666	5	-3.2
For Ultra Short Waves	1,953	93	13.7
For Other Waves	3,241	52	-47.7
Receivers	698	113	-60.5

#### <For Reference>

Type	Apr. '99		Compared with Apr. '98 (%)
	¥1 Mil.	Sets	
<b>Broadcasting Equip.</b>	<b>424</b>	<b>0</b>	-10.3
<b>TV Camera</b>	<b>11,845</b>	<b>266</b>	-49.5
<b>Radio Application Equip.</b>	<b>3,171</b>	<b>892</b>	15.3
Radars	1,102	5	-1.0
For Navigation	1,032	16	13.7
Direction Finders	199	2	278.6
Others	833	13	-2.6
Radio Remote Control Equip.	1,037	872	42.0

#### Import

Type	Apr. '99		Compared with Apr. '98 (%)
	¥1 Mil.	Sets	
<b>Telecom Equipment</b>	<b>31,487</b>		-13.6
<b>Wire Telecommunications Equip.</b>	<b>28,115</b>		-13.2
Telephones	1,537	291	-55.4
Cordless Telephones	563	90	-70.0
Other Types Telephone Sets	973	201	-37.8
Telephone Application Equip.	268	107	-67.3
Automatic Answering Telephone Sets	36	5	-76.0
Others	232	101	-65.3
Telegraph and Picture Transmission Equip.	1,716	101	-50.0
Facsimile	1,629	96	-51.4
Teleprinter	0	0	0.0
Others	87	5	7.9
Switching Equip.	8,245	46	59.1
Carrier Equip.	6,093	162	141.6
Components	10,257	0	-39.6
For Wire Telecom Only	9,379	0	-42.4
Parts for Common Use in Wired/Radio Communication Equip.	877	0	23.5
<b>Radio Communications Equip.</b>	<b>3,373</b>	<b>137</b>	-17.0
Transmitter and Transmission Receiving Equip.	3,080	105	-8.9
Transmitting Equip.	154	7	6.6
Transmitting and Receiving Equip.	2,849	91	-9.2
For Aviation	310	0	1,218.2
For Mobile Telephone	843	37	17.6
For Long/Medium/Short Waves	23	6	40.6
For Ultra Short Waves	54	1	-35.0
For Other Waves	1,696	53	-18.9
Receivers	292	32	-56.9

#### <For Reference>

Type	Apr. '99		Compared with Apr. '98 (%)
	¥1 Mil.	Sets	
<b>Broadcasting Equip.</b>	<b>419</b>	<b>5</b>	-0.7
<b>TV Camera</b>	<b>2,258</b>	<b>2,839</b>	54.0
<b>Radio Application Equip.</b>	<b>238</b>	<b>1</b>	110.2
Radars	470	1	67.3
For Navigation	1,550	2,836	44.6

Remarks: 1) Data are based on the Statistics of Custom Clearance by the Ministry of Finance.

2) Radio Communications excludes the citizen band transceivers and Cordless microphones.

3) There are cases in which the total value will not equal the components because the figures have been rounded one decimal place. Also, the comparative ratios are calculated in ¥1,000 units.

Source: Communications Industry Association of Japan

### Current Electric & Electronic Machinery Statistics (As of April 1999)

Products	Unit	Production			Sales			Stock		
		Mar. '99	Apr. '99	Apr. '99/ Apr. '98 (%)	Mar. '99	Apr. '99	Apr. '99/ Apr. '98 (%)	Mar. '99	Apr. '99	Apr. '99/ Apr. '98 (%)
Video Tape Recorder	Sets	621,074	558,321	70.2	1,351,456	1,060,562	100.1	937,636	1,083,213	106.2
Video Disk Player	Sets	2,145	3,431	25.0	12,549	6,976	53.4	19,130	19,250	25.3
Video Camera	Sets	902,717	936,195	111.2	1,015,288	926,635	113.8	486,796	475,880	88.3
Car Navigation System	Sets	138,162	118,716	112.1	151,590	101,500	100.8	78,040	74,536	81.5
Digital Audio Disk Player	Sets	1,662,447	1,543,526	103.4	1,668,673	1,493,456	103.8	1,517,325	1,537,469	120.3
Active Liquid Crystal Device	1,000 units	4,644	4,178	203.0	3,777	3,369	264.2	1,112	1,183	130.9
Passive Liquid Crystal Device	1,000 units	34,690	33,858	91.8	35,089	32,690	89.4	16,679	16,278	71.7
Photoelectric Converter	1,000 units	896,295	840,365	102.8	998,197	927,473	108.6	399,682	389,402	101.7
Bipolar Semiconductor IC	Mil. yen	6,203	6,447	91.3	5,846	5,768	114.3	-	-	-
MOS Semiconductor IC (logical element)	Mil. yen	150,706	133,108	99.3	132,210	115,340	104.8	-	-	-
MOS Semiconductor IC (memory element)	Mil. yen	82,594	68,597	109.3	72,268	68,720	117.9	-	-	-
Hybrid IC	Mil. yen	25,197	23,079	94.6	21,622	19,757	100.2	-	-	-
General Purpose Computer	Mil. yen	40,654	20,226	45.8	-	-	-	-	-	-
Mid-range Computer	Mil. yen	75,771	18,860	65.1	-	-	-	-	-	-
Personal Computer	Sets	1,447,472	760,653	112.5	-	-	-	-	-	-
Electrical measuring instrument (Except for semiconductors and IC measuring instruments)	Mil. yen	21,500	14,178	101.6	-	-	-	-	-	-
Semiconductor and IC Measuring Instrument	Mil. yen	17,848	12,902	87.0	-	-	-	-	-	-
Industry-use Measurement Control Unit	Mil. yen	33,894	17,972	92.2	-	-	-	-	-	-

Source: Machinery Statistics and Research Office, MITI

### Cable Supply & Demand Classified by Type (As of April 1999)

Type of Cables	Orders Received			Shipment		
	Apr. '99	Apr. '99/ Mar. '99 (%)	Apr. '99/ Apr. '98 (%)	Apr. '99	Apr. '99/ Mar. '99 (%)	Apr. '99/ Apr. '98 (%)
Open Wire (OW)	7,999	80.0	90.3	8,454	97.5	89.9
Winding Wire	15,758	93.0	100.0	16,416	93.0	105.3
Cable for Machinery	5,134	93.2	90.5	5,134	94.2	89.2
Communications Cable	3,995	78.6	92.2	4,434	81.6	96.0
Power Cable	23,686	103.1	94.4	23,252	90.2	87.4
Covered Wire	14,203	98.0	92.8	14,300	96.5	91.3
Cable for Transportation	4,005	78.4	102.1	3,944	78.1	102.3
Total	74,780 (80,471)	93.3 (88.1)	94.7 (87.7)	75,934 (81,960)	91.6 (83.9)	93.2 (83.4)
Aluminum Power Cable	2,821 (1,661)	70.9 (73.4)	41.6 (39.2)	3,232 (2,001)	51.0 (48.3)	58.8 (51.8)
Optical Cable				745,389 (19,945)	48.3 (44.3)	178.1 (109.1)

Remarks: 1) Figures of optical cable show "km Core."

2) Figures in parenthesis represent the amount in yen.

Source: The Japanese Electric Wire and Cable Makers' Association

### Cable Supply & Demand Classified by Major Consumption Fields (As of April 1999)

Fields	Orders Received				Shipment			
	Apr. '99 (Actual)	Apr. '99/ Mar. '99 (%)	Apr. '99/ Apr. '98 (%)	May '99 (Estimated)	Apr. '99 (Actual)	Apr. '99/ Mar. '99 (%)	Apr. '99/ Apr. '98 (%)	May '99 (Estimated)
Telecommunications	3,548	93.6	104.7	1,900	3,948	93.7	109.8	3,000
Electric Power	8,007 (1,704)	92.2 (55.8)	82.3 (29.0)	8,100 (3,300)	8,986 (2,272)	84.7 (45.9)	79.7 (52.1)	10,100 (2,500)
Electric Machinery	19,065 (244)	95.6 (97.6)	96.6 (107.5)	18,400	19,175 (263)	91.6 (98.1)	97.2 (123.5)	17,900
Automobile	5,543	82.9	108.6	5,100	5,619	83.8	110.4	4,900
Construction/Cable Shops	28,016 (28)	95.7 (87.5)	95.7 (50.0)	23,400	27,775 (29)	96.4 (69.0)	94.7 (36.7)	23,800
Others	6,382 (68)	99.4 (50.4)	88.2 (63.6)	5,700 (400)	6,527 (121)	102.9 (137.5)	84.3 (93.8)	5,500 (400)
Domestic Demand Total	70,561 (2,044)	94.4 (58.9)	94.8 (32.6)	62,600 (3,700)	72,030 (2,685)	92.8 (50.2)	93.8 (56.1)	65,200 (2,900)
Export	4,219 (777)	79.0 (153.9)	93.8 (151.8)	3,400 (900)	3,904 (547)	74.1 (55.3)	82.3 (73.6)	3,300 (800)
Total	74,780 (2,821)	93.3 (70.9)	94.7 (41.6)	66,000 (4,600)	75,934 (3,232)	91.6 (51.0)	93.2 (58.5)	68,500 (3,700)
Core Cable Sales	29,980 (95)	97.6 (105						