News

NEC to Launch New Brand Strategy & Campaign "Get Personal" To Expand Mobile Business in China

On August 24, 2004, NEC announced that NEC Telecommunications (China), a new company and a business entity established in May 2004 to actively pursue mobile solution business in China, introduced a new branding strategy "Get Personal," which is in line with NEC's global corporate statement "Empowered by Innovation," to further expand its mobile business in China.

Along with the campaign, NEC reveals its new strategy to enter into the wider-range product market segment to appeal to a various consumers in China. With the new and specific target market segmentation, NEC will further launch products answering to the requirements from every customer of each segment. The three new series N109, N100 and N110 with seven color variations are one of the key products for the new strategy.

"'Get Personal' is a new branding platform to help NEC increase its awareness in the telecom arena and build brand loyalty in China. We are aiming to position the company as the most creative, leading mobile solutions company in China within 3 years. More than 20 varieties of mobile terminals will be introduced in China this year. This new branding strategy will be a dynamic step towards strengthening NEC's presence in the Chinese mobile market," said Brian Lu, President of NEC Telecommunications (China).

"Our latest challenge regarding current brand perception is to create a unique, human and user-friendly image, showing NEC's deeper level of communication with consumers by defining ourselves as a 'people company,' which proactively reaches out to customers to gain knowledge about their needs in China. Then, customers can acquire not only the latest state-of-the-art technology but also a mobile phone that suits their own taste," said Wang Shanqi, Vice President and marketing director at NEC Telecommunications (China).

The new models introduced are bar-shaped "N109," "N100" and clamshell-shaped "N110." They target a wider range of people, from business to individuals, with friendly, simple and stylish designs. They are equipped with 300,000 pixels digital camera with various camera functions, 1.8-inch color large TFT screen with 65,000 colors, JAVA and MMS. N100 and N109 feature 40 polyphonic ring tones and also support motion jpeg.

"China is one of NEC's most important markets where NEC can demonstrate its full competence in mobile internet and 3G. Now President Lu has come on board he is actively expanding businesses with his market know-how in branding product planning/marketing and retailing. NEC expects further strong initiatives by NEC Telecommunications (China) will help create the market and aid NEC in obtaining a leading position there," said Susumu Otani, Associate Senior Vice President and head of NEC's Mobile Terminals Operations Unit.

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Photo 1 Mobile terminal for the Chinese market "N109" "N100" "N110."

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NEC Realizes 3D System-on-Glass LCD Boasting World's Highest Resolution 3D Images

On August 30, 2004, NEC announced that it succeeded in the development of a novel 3D system-on-glass ("SOG"*) liquid crystal display ("LCD") that can display the world's highest resolution 3D images. NEC's original Horizontally Double-Density Pixel ("HDDP") structure breaks the conventional LCD resolution barrier, and combined with a lenticular-lens enables the world's highest 3D display resolution of up to 235ppi (pixel per inch).

The features of this 3D SOG LCD are as follows:

1) A 470ppi (horizontal) × 235ppi (vertical) pixel resolution in 2.5-inch diagonal and 640 × 480 pixel VGA format has been achieved through NEC's own HDDP structure. Each pixel is of rectangular shape with horizontally striped color sub-pixels. This design doubles the horizontal resolution of conventional LCDs.

2) Brighter and higher resolution 3D view, as compared with conventional 3D LCDs, has been achieved by fully utilizing the HDDP/lenticular-lens combination. Boasting a thin and simple structure, no special glasses are required for 3D viewing.

3) 2D or 3D is selectable, depending on the contents for display, enabling simultaneous display of 2D and 3D pictures with arbitral sizes and shapes in the same picture/screen.

This technology greatly improves 3D LCD resolution by up to 235ppi in 3D format, as compared with a 90ppi resolution on a mobile phone utilizing a conventional 320 × 240 pixel QVGA 180ppi 2D display. Through application of this technology attractive mobile equipment with simultaneously bright 3D view and high quality 2D image (such as photo and e-mail) display is achieved.

Although interest in 3D display without special glasses is growing along with the improvement of mobile equipment functionalities, conventional 3D display still has many challenges. For e.g., a 3D display needs to display more than two pictures for the right and left eye separately, and as one 3D pixel needs at least two adjacent pixels horizontally, effective horizontal 3D resolution is halved as compared with that of the vertical. Lower brightness in 3D display mode as compared with 2D mode, which occurs in some 2D/3D convertible displays, is another issue.

NEC has solved these problems with its 3D SOG LCD, which utilizes a HDDP/lenticular-lens combination. In the HDDP structure, pixels have a rectangular shape as compared with square pixels in conventional displays. This pixel shape doubles the horizontal resolution to 470ppi as compared with conventional displays. 2D pictures are displayed by sending the same contents to two adjacent pixels resulting in a 235ppi high quality 2D view. 3D picture is shown by sending two pictures for the left and right eye to two adjacent pixels also resulting in 235ppi 3D view, the same resolution as that of 2D view.

This achievement was announced at Asia Display/IMD'04, which was held from August 23 to 26, 2004, in Daegu, Korea. NEC will continue to further develop this new 3D SOG LCD technology to extend mobile equipment capability.

*SOG: technology to integrate semiconductor systems on glass substrate.

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NEC Realizes Control of Position & Diameter of Carbon Nanotube — Technology that contributes to electronic devices utilizing carbon nanotubes —

On September 2, 2004, NEC announced the development of a diameter/position-controlled carbon nanotube ("CNT") growth technique that is based on conventional electron beam ("EB") lithography. This technique will provide a practical method for controlling the position and diameter of each CNT. NEC expects this result will promote the research and development of high-performance CNT electronic devices.

This result was achieved through the development

of the following key technology.

1) Tiny, iron-doped resist dots were made into a pattern using EB lithography. Thermal annealing was subsequently carried out to segregate the iron nanoparticles in the dot pattern. Due to the original content of the iron dopant and the size of the resist pattern, the diameter of the particle can be effectively controlled well below the lithography limit.

2) Control of the position of resist dots is enabled through EB lithography, which uses high-resolution EB resist called "calixarene." Iron nanoparticles are precisely placed on the point where the original resist dot has been formed.

3) Single-walled carbon nanotubes ("SWNT") with a designed diameter can be grown from the iron nanoparticles using the high-yield CNT growth technique based on chemical vapor deposition ("CVD").

Using this lithographically-directed nanoparticle synthesis method, iron particles having a 1.7±0.6nm diameter distribution were successfully patterned at a 100nm pitch within a positioning accuracy of ±5nm.

CNTs were grown by CVD at 750°C using ethanol. As a result a CNT diameter distribution of 1.3±0.4nm was obtained. NEC has already confirmed that the growing direction of CNTs can be controlled by applying an electric field during CVD growth. These techniques will enable NEC to grow CNTs with individually controlled position, diameter, and orientation.

These results are expected to promote the research and development of CNT transistors as high-performance electrical devices. NEC will continue to work on advancements in CNT control technology, electric characteristic control, device structure design, and fabrication process development with the aim of realizing a CNT transistor by 2010.

This result was announced on September 4 at the 2004 autumn meeting of the Japan Society of Applied physics being held from September 1 to 4 in Sendai, Japan, and at the 2004 international conference on Micro- and Nano-Engineering held from September 19 to 22 in Rotterdam, Holland. Japan Fine Ceramics Center (JFCC) and the New Energy and Industrial Technology Development Organization (NEDO) commissioned this research as a part of the Nanocarbon Application Product Creation Technology Project.

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NEC's Multimedia Content Adaptation Solution is Designed to Expand the Introduction of Multimedia Services on Mobile Phones. — The first user to adopt this solution is Telefónica Móviles in Spain —

NEC has received an order for its Multimedia Content Adaptation Solution from Telefónica Móviles España, S.A., Spain's largest mobile operator with 18.6 million subscribers. Spain has a population of 41.11 million and 83% mobile phone penetration, one of the highest levels of mobile phone penetration in Europe.

The Multimedia Content Adaptation Solution is a server software system that optimizes video, music, and photographic data for various types of services and terminals. Besides overcoming barriers and difficulties between different mobile telecommunications providers and different terminals, it facilitates the 2.5G to 3G transition, enabling free use of video, image, and music as well as voice and text data.

Multimedia content distribution, together with the Multimedia Messaging Service (MMS) launched in 2002, are vital elements in the business strategies of European and Asian mobile operators, who are looking for ways to increase their average revenue per user (ARPU, i.e., per user sales). Multimedia services will, while stimulating new user demand, also trigger new mobile terminal sales.

While, the prospects for expansion of multimedia services are good, the proliferation of services and introduction of new, higher-performance terminals have, in a growing number of cases, resulted in the inability and difficulties of different services and terminals to share multimedia content.

With the introduction of NEC's Multimedia Content Adaptation Solution, 2.5G terminal users can enjoy the use of a fuller range of 2.5G and 3G services without having to purchase new terminals. At the same time, 3G service users will be able to participate fully in 2.5G user communities. From the mobile operator's perspective, packet transmission volume

will increase and 2.5G users stimulated to upgrade to higher-added-value 3G services. In addition, it will facilitate exchanges between providers; for example, service providers in Japan will now be able to do business with other providers overseas.

Since June 2003, NEC has, using i-mode* technology and know-how provided by NTT DoCoMo, supplied Telefónica Móviles España with the mobile Internet platform system and i-mode terminals required for its MoviStar emocion mobile Internet service. NEC has also supplied mobile Internet service platforms using i-mode technology to FE Telecom in

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* i-mode is a registered trademark of NTT DoCoMo, Inc.
† Other names of companies and products are trademarks or registered trademarks of each company.

Taiwan, Bouygues Telecom in France, WIND in Italy and Cosmote in Greece. Transfer of all these systems has proceeded smoothly. To NEC, the new order from Telefónica Móviles not only adds to a growing record of success overseas; it is also an opportunity to strengthen its business as a supplier of non-i-mode-platform technology in the mobile Internet sector. As the telecommunications world transitions from 2.5G to 3G, NEC looks forward to further fleshing out its mobile Internet application line-up and actively developing new mobile Internet platform businesses targeting mobile telecommunications providers aiming to increase profitability and improve customer satisfaction, by offering attractive mobile Internet services.

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Five Major Mobile Suppliers Team up with the TeleManagement Forum to Drive Open Management Standards — Ericsson, Motorola, NEC, Nokia and Siemens join forces to drive implementation of a common architecture for mobile network management —

On 11th October, 2004 - Long Beach, California - at The TeleManagement World Conference, the world's largest mobile network equipment providers — Ericsson, Motorola, NEC, Nokia and Siemens — announced that they have initiated a Co-operative Open OSS Project (CO-OP) under the framework of the TeleManagement Forum.

The CO-OP members will work together on architecture specification, testing and verification of mobile network management systems (NMS). The goal of the CO-OP is to reduce the complexity of integrating network equipment and management systems from multiple vendors in mobile operator networks.

"The TeleManagement Forum is very excited about this new initiative, as it is a significant step by the mobile industry to support the 'Lean Operator' concept of highly flexible operations, lower operating costs and faster time-to-market," said Keith Willetts, Founder and Chairman of the TeleManagement Forum.

"We are extremely pleased to see these major suppliers putting their combined weight behind a very practical implementation of the TeleManagement Forum's New Generation Operations Systems and Software (NGOSS) framework, and actively working together in the spirit of openness," he continued. "We

expect this to drive down the 'integration tax' of the systems integration effort and encourage other suppliers, software vendors and operators to study this initiative and give it their full support."

The collaboration will start as a TeleManagement Forum project. Some of the key focus areas of collaboration are: common OSS system specification; standardized interfaces for peer-to-peer element management and out-of-the-box functionality; and agreeing on common testing and verification practices.

Service providers are expected to benefit through cost savings as OSS systems develop more ready-to-integrate functionality, a clearer set of interfaces and become pre-tested for interoperability. As the TM Forum CO-OP Project is defined, it will become easier to integrate OSS elements that offer greater flexibility and stability in a multi-vendor environment.

The initial goal is to build on the TM Forum's NGOSS foundation and drive the implementation of a common system architecture for interoperable network management systems. Later, the project will present testing and verification procedures and reference implementations based on the agreed standards.

Network equipment providers who can contribute to this work are invited to join the TM Forum CO-OP Project, which will engage operators to ensure that

the work is aligned with their requirements. The Project will work closely with other key standardization initiatives such as OSS/J, 3GPP, 3GPP2 along with the TeleManagement Forum's Service Provider Leadership Council (SPLC).

Phil Holmes, Chairman of the SPLC, an influential group of operators, said, "We strongly welcome this initiative from the TeleManagement Forum and these major mobile equipment suppliers to help make New Generation OSS a reality in the marketplace. The SPLC consists of major operators such as Vodafone, Orange, BT, NTT and AT&T, and is a forceful group of buyers and thus customers of the companies backing the TM Forum's CO-OP initiative."

Holmes continued, "Reducing integration problems and strengthening the operators' business capabilities is a welcome aim of this new group. The SPLC will take a strong interest in encouraging this group to succeed."

Karl-Wilhelm Siebert, Director of General Process and Project Coordination at Vodafone D2, agreed, "We believe this initiative holds the key to a more cohesive, streamlined approach that promises a best practice OSS framework for us to follow. The economics of the current market mean that mobile operators such as Vodafone have been searching for dramatically simpler OSS implementation for some time, and we're pleased that the TeleManagement Forum is driving this forward."

"This is an obvious next step to extend cooperation between network equipment providers, and we believe operators will benefit from this through reduced cost of ownership and short time-to-market for new services," said John Montgomery, Vice President, Ericsson OSS Products.

"Motorola is committed to the CO-OP initiative and to tapping our technology expertise to help reduce the complexity and costs of network operations," said Tom Shirley, vice president and general man-ager, OSS Division Global Telecommunications Solution Sector, Motorola. "We fully support this effort to fuel the success of operators and the industry through open collaboration with other major OSS suppliers."

"NEC is the leading mobile solutions company of Japan where the most advanced mobile internet, such as WCDMA and i-mode, both technology wise and service-wise, is operating in a very large scale," said Tsutomu Kunita, General Manager at Network Software Operations Unit. "With the experience and technological capabilities, NEC will contribute to the realization of CO-OP objectives. Through CO-OP activities, NEC anticipates a higher performance and easy-to-use NMS for operators and efficient system integration of OSS to accomplish high-level services in quick and prompt manners."

"Nokia has seen this systems 'integration tax' pressure on operators and service providers for some time now, and we are very excited to work together with other major OSS vendors to provide practical solutions for improving the overall performance of the OSS industry," said Juha Lipiainen, Director, OSS Middleware Business, Nokia Operations Solutions, Networks, Nokia.

"We strongly support this major step in the industry to drive solutions that address the demand on lowering OSS integration tax by applying the practice of peer-to-peer integration - as we have seen it for many years in the network infrastructure business - to network management," said Christoph Caselitz, President of Mobile Networks at Siemens Communications.

"TM Forum members will benefit from this initiative, and I am glad to mention that the TM Forum has received additional interest in the CO-OP initiative from major equipment suppliers from Europe and North America including Alcatel, Cisco Systems and Lucent Technologies," added Keith Willetts.

Corporate Communications Division

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NEC Receives Orders for Digital TV Transmitters for China — With its first contracts in China, NEC aims to accelerate its Digital TV business in the market —

On October 19, 2004, NEC announced that it received orders for Digital TV transmitters from Chinese broadcasting companies, through its affiliated company NEC Solutions (China) Ltd. This is the first time that NEC's Digital TV transmitter will be in-stalled and operated in China.

The orders awarded to NEC are as follows.

1) NEC received an order from Shanghai Technology Development Co.,Ltd., a leading research and

engineering authority of broadcasting and media. NEC will provide a 2.5kw digital TV transmitter, which will be installed in the Shanghai Oriental Pearl TV Tower. Shanghai Media & Entertainment Group, the management and operation unit for broadcasting equipment, will run the field trial.

2) NEC also received an order from Shanghai Oriental Pearl Transmission Co.,Ltd., a TV and radio broadcasting firm in Shanghai. NEC will provide two 1.2kw digital TV transmitters, which will also be installed in the Shanghai Oriental Pearl TV Tower. In Shanghai, commercial digital TV broadcasting services such as the delivery of PR and advertising information to buses, taxis and ferries have begun, and NEC's digital TV transmitters will be also utilized for the service.

In addition, NEC had agreed to cooperate in digital TV broadcasting area with Shanghai Oriental Pearl Transmission Co.,Ltd., to prepare for the future business acceleration. Based on the agreement, the company will provide maintenance/support services for NEC's analog and digital TV broadcasting transmitters installed in all over China. Also, NEC can utilize the Shanghai Oriental Pearl Tower transmitting station as NEC's demonstration base and showcase for digital TV transmission systems.

In China, two digital TV transmission formats are currently under consideration for commercial service. It is anticipated that the format will be officially decided in early 2005, and then the deployment of equipment will begin. NEC, with the expertise and proven business record in the broadcasting system area in 103 countries worldwide and technological capabilities in the digital TV area, aims to further contribute to building digital broadcasting infrastructure in China.

Corporate Communications Division

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NEC Launches World's Fastest Vector Supercomputer — SX Series Model "SX-8" —

On October 20, 2004, NEC announced the worldwide launch and availability of the SX series model "SX-8," the world's most powerful vector supercomputer with a peak processing performance of 65TFLOPS (TFLOPS: one trillion floating point operations per second).

Inheriting vector architecture, whose excellent sustained performance has been demonstrated by the Earth Simulator, the new product combines enhanced CPUs, and memory and I/O processing performance. A further-enhanced, single-chip, vector processor, realized by the SX-6, also contributes to the greatly improved price performance and space saving offered by the SX-8.

The SX-8, with its dedicated CPUs, large-scale memory, and high data transfer rate between memory and CPUs, delivers much higher sustained performance than scalar supercomputers with a number of general-purpose CPUs. This is particularly effective in fields that require large-scale and ultra high-speed computing of massive data, such as meteorological forecasting, environmental simulations and automotive crash analysis.

Features of the new product are described below.

(1) World's highest computing performance of 65TFLOPS

The single-node model (includes up to 8 CPUs) achieves a peak vector performance of 128GFLOPS (GFLOPS: one billion floating point operations per second), while the multi-node model achieves the world's fastest peak vector performance of 65TFLOPS when configured with 512 nodes.

In addition, a 262TB/s (36.8TB/s in SX-6) high peak data transfer rate between CPU(s) and memory is realized, and it also boasts an enlarged memory capacity of up to 64TB (16TB in SX-6).

(2) Further-enhanced single-chip, vector processor

The vector processor (vector and scalar units) is integrated into a single chip by applying leading-edge CMOS technology with 90-nanometer (nanometer: 10^{-9} meter) copper interconnects and the most advanced LSI design technology. Pipelines of the vector unit, the central part of a vector processor, operate at a 2GHz clock frequency, which is double the speed of the SX-6, and realize a peak vector performance of 16GFLOPS per CPU.

Moreover, hardware support of the vector square root operation achieves a sustained performance six times higher than that of the SX-6.

(3) Excellent space-saving and power-saving

The SX-8 achieves a reduction in space by 25% and power consumption by 50% as compared with conventional models. This was achieved by applying high-density packaging technology in which processor(s) and memory are implemented on a single module.

(4) Software environment suitable for large-scale, multi-node system

The basic software, "SUPER-UX," maintains upward compatibility with the existing SX series, and achieves further scalability expansion due to enhanced I/O processing and MPI. Global File System (GFS), a high-speed, file sharing system among multiple nodes on a system or among different systems, has also been enhanced. By utilizing GFS, users can access the shared files with a high performance close to that of a local disc, and can also take advantage of the high performance functions of GFS from third party platforms such as SUN and HP as they do with NFS (Network File System).

The monthly rental price of the SX-8 starts from approximately 1,170,000 yen, and shipment will commence in December 2004.

NEC aims to achieve worldwide sales of more than 700 SX-8 units for the next three years. In 1983, NEC entered the market of supercomputers with the launch of SX-2, whose performance exceeded 1GFLOPS for the first time ever, to meet the needs of ultra high-speed scientific computation. Since then, NEC has received over 700 orders across the SX series for their high sustained performance and excellent price performance.

Supercomputers have been utilized for various fields including the development of advanced technology such as functional device materials with nanotechnology, large-scale scientific computing and simulation for energy development such as nuclear fusion, aeronautics and space development, and engineering such as automotive design and development of electronic products.

Recently, while the scale of the problems to be solved becomes larger, a reduction in the development period is ever increasingly desired. Requirements for increase in speed of problem analysis, design, and optimization, have also become more demanding, leading to the need for faster supercomputers.

To respond to these needs, NEC has developed the new vector supercomputer, which boasts greatly improved operating and price performance in comparison with scalar servers that are used for large-scale and large-capacity scientific computing.

Please refer to the appendix for the specifications of the SX-8.

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Table I SX-8 specifications.

Specifications			
	Multi-node	Single-node	
	2 - 512 nodes	1 node	
	SX-8/M	SX-8/A	SX-8/B
Central Processing Unit (CPU)			
Number of CPUs	8 - 4,096	4 - 8	1 - 4
Logical Peak Performance	176G - 90TFLOPS	88G - 176GFLOPS	22G - 88GFLOPS
	(22GFLOPS/CPU)	(22GFLOPS/CPU)	(22GFLOPS/CPU)
Peak Vector Performance	128G - 65TFLOPS	64G - 128GFLOPS	16G - 64GFLOPS
	16GFLOPS/CPU)	(16GFLOPS/CPU)	(16GFLOPS/CPU)
Main Memory Unit (MMU)			
Memory Architecture	Shared and distributed memory	Shared memory	
Capacity	64G - 64TB	32G - 128GB	16G - 64GB
Peak Data Transfer Rate	262TB/s	512GB/s	256GB/s
Internode Crossbar Switch (IXS)			
Peak Data Transfer Rate	16GB/s × bidirectional (per node)	-	