NEC's Activities for Creating a Ubiquitous Network Society

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Progressing to a Ubiquitous Network Society

New life styles and businesses have been produced by creating a more highly networked society. People freely communicate with each other in public places and offices via wireless LAN. In addition to e-mail, communications using voice and video by VoIP have become increasingly popular and cellular phones now function as a personal navigation system, e-wallet, personal ID, or other type of card. Intelligent home electronics controlled by one's home server and real-time, bi-directional e-learning from home over broadband networks have made life more convenient.

Issues, such as privacy protection, the digital divide, and compliance with regulations, have however become obvious. We are however steadily progressing toward realization of a ubiquitous network society as these issues are tackled.

Platform Technologies Supporting a Ubiquitous Network Society

Technologies and abundant expertise that NEC has accumulated over the years are contributing greatly to realization of a ubiquitous network society.

(1) Next-Generation Network

With more and more network infrastructure being converted to optical and IPv6 including backbone hardware, reliable networks with high capacity that serve as social infrastructure are now being constructed. Third-generation cellular and wireless LAN technologies have furthermore enabled mobile networks with higher bandwidths. This has brought about integrated broadband and mobile services.

NEC therefore provides "UNIVERGE" as the core product family of broadband solutions. NEC's advanced research, such as WDM technology for wide-area optical networks and IP handover technology for high-speed moving objects, also contributes to achieving stable network service platforms.

(2) Servers and Storage with High Reliability, Availability, and Scalability

Servers and storages that are highly reliable, available, and scalable are indispensable for creating stable social infrastructure. The same holds true for mission-critical system integration (SI) technology. The amount of data and load of a ubiquitous platform system are unpredictable, so the system has to be flexibly configurable. VALUMO, NEC's platform technology, makes this possible with virtualization, autonomy, distribution, and cooperation technologies. Additionally, with grid computing technology, VALUMO makes possible the dynamic system configuration of a widely distributed and heterogeneous environment between companies and data centers.

(3) Technology for a Secure, Safe, and Comfortable Society

Security issues such as preventing unlawful access and protecting privacy become more critical in a ubiquitous network society. For a secure, safe, and comfortable society, NEC provides a secure

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ubiquitous environment with advanced technologies, such as personal authentication using biometrics, information protection based on security policies, and dynamic access control.

(4) Common Platform Middleware for Efficient Application Development

For fast and reliable ubiquitous services, it is important to utilize middleware that has a common programming interface (API) for the application software. NEC therefore offers "Ubiquitous Application Platforms," a family of middleware that provides common interfaces for RFID, presence, location, and terminal information.

(5) Terminals and Devices with Smaller and More Advanced Features

Lifestyles are changing dynamically. There is increasing communication among multifunctional cellular phones and terminals, networked home electronics, and embedded devices. RFIDs will soon be applied more extensively for healthcare and intelligence of the transportation system will be enhanced with telematics. To accelerate these improvements in convenience, NEC is making rapid advances in research and development of RFIDs, semiconductors and system LSIs, 3rd generation cellular phones, interpreter terminals, and fuel cells.

Service Platforms for Expanding Customer Business

Social infrastructure for broadband and mobile communications is maintained. Based on this infrastructure, new services are being provided to create a ubiquitous network society.

Distance consultations and e-applications via a broadband network are already a reality in many municipalities, and a lot of experiments are being successfully demonstrated, such as those for B2B SCM using RFIDs and location information, product traceability, and e-ticket services via cellular phone. NEC is participating in many projects related to creation of ubiquitous networks. Examples include a "Traceability/management system for farm product information" by the MPHPT*, a "Fresh product traceability system" by the MAFF† and JA Kumamoto, an "IT-FRENS & TRACE system" by Japan Freight Railway, the "Development of an RFID ring, and research on ubiquitous medical systems" by the Medical Science School of Yokohama City University, and an "e-Passport project" by the British government. NEC will provide new service platforms from the user's point of view based on the latest achievements in these projects.

Conclusion — Creating a More Affluent Society

Few companies can provide all the IT and network technologies, terminal and device technologies, and the services based on them that are necessary to create a more affluent society. To achieve such a society, NEC integrates its advanced technologies, collaborates with the organizations concerned as well as with customers, and continues to move forward.

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