

Creating an e-Society where we can utilize services whenever, wherever with whatever, in the desired style, and in a secure and reliable manner



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The e-Society envisioned by OKI is a society full of ubiquitous services. In such a society, you can find a restaurant that best suits your taste, health and eating habits wherever you go. I believe not only convenience and efficiency but also services helping people focus on more human-centered activities are necessary for the e-Society. In order to create such a society, highly sophisticated information security and natural people-information interfaces are essential in addition to network technology. In this context, we have promoted the development of new technologies from various perspectives.

Ubiquitous Services as a New Innovation

The popularization of the Internet as well as advanced networking technologies such as broadband and mobile communications has changed the conventional concepts of "distance," "time" and "national borders" while accelerating paradigm shifts* in various fields. Under these circumstances, the advent of a new innovation called ubiquitous services has attracted considerable attention. This innovation allows us to access individualized information, content and services in the most desirable manner whenever and wherever necessary.

The word "ubiquitous" comes from Latin, meaning "being everywhere at the same time." Conventional services that are constrained largely by time and space require users to use corresponding devices. On the contrary, the advent and popularization of personal computers and cell phones have dramatically expanded the scope of services available to us without the constraints of time and space.

Let us take a simple action of withdrawing money as an example. Several decades ago, we had to go to bank counters with our bank books and seals during business hours to draw money from our own accounts. Then we started using cash cards and ATMs. After a while, ATMs were installed at almost all convenience stores. Today we can deposit, withdraw and use electric money with our cell phones. In short, we have come closer to the age of ubiquitous services in terms of withdrawing money. Further development of identity verification technology might allow us to draw money or shop at stores without carrying any devices in the future. When this future is realized, we will be freed from time, place and physical constraints. Ultimate ubiquitous services entail an environment in which we are surrounded by all kinds of services wherever we go with complete access whenever necessary.

OKI has been involved in the development of various solutions in order to realize an e-Society full of ubiquitous services.



"Edy charge solution" that allows people to charge (add value to) their mobile Edy application by simply accessing their Internet bank account via their mobile phone.

*A paradigm shift refers to a process in which the dominating idea in a certain period or field is replaced by a new idea.

Challenges for the e-Society and NGN (Next Generation Network)

Networks play an important role in realizing ubiquitous services. However, current networks have some problems to be overcome such as security on the Internet, quality of services, and interfaces between different networks. NGN (Next Generation Network)* is a new global network to solve all these problems.

NGN in fact is a service platform that integrates information, fixed and mobile telecommunication systems, and broadcasting into one package so that many different services can be offered through one network. When combined effectively with different kinds of services, NGN would help realize a safe, secure society full of ubiquitous services.

* NGN (Next Generation Network) is an IP-based network service platform for the coming generation. It is currently being standardized by ITU-T (International Telecommunication Union Telecommunication Standardization Sector). NGN allows the distribution of high-quality images, videophone services and highly reliable communication services for enterprise use as well as the conventional fixed and mobile telephone services on the same IP network.



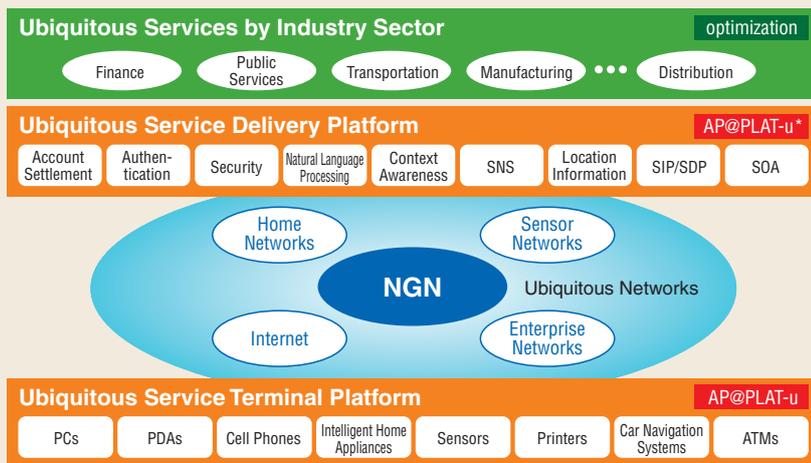
Architecture for Realizing Ubiquitous Services

Believing that continuous technological innovation is necessary for delivering ubiquitous services to customers, OKI has defined an architecture for creating such services in an open environment. It has become a basis of OKI's technological development and product development.

The architecture is built around NGN, and comprised of different networks (including the Internet, enterprise networks and sensor networks), a

common architecture for delivering ubiquitous services, and ubiquitous services individualized for different industry sectors. OKI has addressed the creation of safe, secure ubiquitous services individualized for each customer based on this architecture.

● Architecture for Realizing Ubiquitous Services



*AP@PLAT-u is a platform for building systems to deliver ubiquitous services. It is designed to standardize and connect different services.

Employee Perspective



Mitsuo Shimohata

Guest Associate Professor
OKI Endowed Course in
Ubiquitous Services
Interfaculty Initiative in
Information Studies
The University of Tokyo

I now teach the OKI Endowed Course in Ubiquitous Services at the University of Tokyo. As an engineer at OKI, I long believed that good services were the natural outcome of good technology. As businesses have recently become increasingly service-oriented, I have recognized the importance of services.

The concept of ubiquitous services was developed in response to this service-oriented trend. The endowed course helps students depart from the conventional technologically-oriented way of thinking, discusses how services should be in an e-Society full of ubiquitous services, and explores challenges in popularizing such services. I want to experience the convenience and comfort of such a society in the near future.

Column

OKI Endowed Course in Ubiquitous Services

Aiming at realizing an e-Society, the OKI Group has supported academic research on ubiquitous services. In April 2007, the OKI Endowed Course in Ubiquitous Services was opened at the Interfaculty Initiative in Information Studies, the University of Tokyo. The purpose of the course is to deepen knowledge about ubiquitous services through practical surveys and analysis, carry out research and development for creating such services, and thus contribute to society.

In order to commemorate the opening of the course, a symposium under the title "Service

Innovations Through Ubiquitous Services" was held at Yasuda Auditorium of the University of Tokyo on February 4, 2008. At the symposium, Professor Ken Sakamura of the University of Tokyo (Interfaculty Initiative in Information Studies) and Katsumasa Shinozuka, President of OKI, delivered keynote speeches that were followed by a panel discussion. The participants in the discussion enthusiastically exchanged their opinions on service innovations offered through the infrastructures of an e-Society, challenges in popularizing ubiquitous services, and other important topics. The course will continue to promote joint research projects and symposiums on such topics.





Akifumi Sakamoto

General Manager
Ubiquitous Service Division
Network System Company

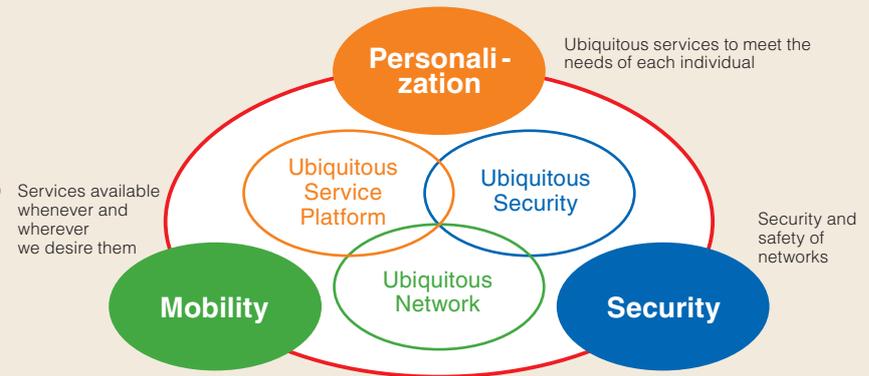
Network access is ubiquitous today. More and more devices around us such as cell phones, video game consoles, cars and sensors are being connected the network. Along with intelligent functions such as image recognition, we will be surrounded by sophisticated services most appropriate for us wherever and whenever we desire, even at the exact moment we come to want them. Looking ahead to such a future, we put great importance on discussing exactly what services we can offer and how to deliver them now. OKI was founded by a man believing in the future of telecommunication. The history of OKI is a history of taking on new challenges. We will continue to uphold this tradition and offer new values.

Three Keys to Realizing Ubiquitous Services

There are three keys to realizing ubiquitous services: personalization, mobility and security. OKI has developed

various products and the technologies embodying them, thus contributing to the realization of services that could solve problems in an e-Society full of ubiquitous services.

● Three Keys to Realizing Ubiquitous Services



■ Case Examples

Personalization

Reproducing One's Real Voice – Utilizing OKI's Speech Synthesis Technology



Professor Izumi Maki at Osaka University of Arts had to have his vocal cords removed due to a throat disease. OKI offered the professor its innovative speech synthesis system that could reproduce the user's real voice. Based on the data of the professor's voice recorded before the surgery, the system reproduces his real voice using OKI's corpus-based text-to-speech (CTTS) technology. Professor Maki was back at the university after the surgery and started teaching again using the system in April, 2008. Since the system converts text (not only lecture notes prepared beforehand but also text input through a keyboard during lectures) into real-time speech in his real voice, the professor is able to communicate with his students in a very natural way.

The function was designed to support autonomous mobility. It allows intuitive navigation by adding a sense of direction to voice communication.

During the test carried out in the form of an emergency drill, the participants were given handheld terminals called Ubiquitous Communicators*. Guided by directions given through these terminals, the participants were able to go to the designated evacuation area.



*The Ubiquitous Communicator is a handheld terminal developed by YRP Ubiquitous Networking Laboratory.

Mobility

Participation in the Tokyo Ubiquitous Plan: Ginza

OKI participated in the "Tokyo Ubiquitous Plan: Ginza," a filed test program organized by the Tokyo Metropolitan Government and the Ministry of Land, Infrastructure and Transport. During the program conducted from November 2007 to March 2008, OKI tested the "eSound positioning" function of its IP voice communication software called eSound Engine.

Security

Highly Secure Wireless LAN System

In March 2008, OKI delivered its highly secure wireless LAN system to Mizuho Information & Research Institute Inc. Using wireless LAN equipment developed by Aruba Network Inc., U.S.A., the system ensures a high level of security by transmitting encrypted data in both wired and wireless sections of communication networks. The system, which is built based on OKI's experience and knowledge in the area of information systems for the financial industry, meets FISC Security Guidelines.*

*FISC Security Guidelines are the computer system security guidelines established by the Center for Financial Industry Information Systems (FISC).



Efforts for Promoting Telework, a Working Style Suitable for an e-Society Full of Ubiquitous Services, and Problem Solving Through Practice

Telework, a work arrangement in which employees work at locations other than traditional workplaces (offices) utilizing IT, has recently attracted considerable attention. Telework is regarded effective in three aspects: 1) the reduction of employment constraints for the physically disabled or those who have to stay at home for child rearing or nursing care; 2) the realization of more efficient working arrangements; and 3) easier risk management in times of disaster (business continuation even when the office is unusable or commuting is impossible). Although telework involves the solution of several problems such as security and labor management, its flexibility is unaffected by time and place which makes it suitable for an e-Society full of ubiquitous services.

The OKI Group has been actively adopting telework for disabled persons. OKI Workwel, a special subsidiary* of OKI, has 32 developmentally disabled persons as teleworking employees as of April 2008. As the company has gained experience in working with teleworkers, it has come to realize several problems involved in this style of work. Among them are 1) slower decision making when

working as a team, 2) limited information available to teleworkers, 3) difficulties in conducting effective training, and 4) feelings of loneliness teleworkers are likely to suffer. In 2007, the company developed a new communication system called the Workwel Communicator to solve these problems, and support information sharing and decision making by teleworkers. Based on the OKI Group's philosophy of universal design, the system features a user-friendly interface reflecting opinions from the company's physically disabled employees and a high-quality voice communication function suitable for prolonged use.



The User's screen of the Workwel Communicator that allows the members of a project team in different locations to have a meeting in a virtual conference room

Based on such experiences, some other companies of the OKI Group have started adopting telework in order to raise business efficiency, and help their employees work-life balance.

*A special subsidiary is a company established to provide special considerations for the employment of people with disabilities as defined in the Law for Employment Promotion, etc. of the Disabled.

Employee Perspective



Kenji Yamamoto

OKI Workwel

I work at home in Miyazaki as a teleworking employee of OKI Workwel. My job is to create and update the Websites of our customers. I use the Workwel Communicator to hold discussions with other people.

Before the introduction of the Workwel Communicator, I used to use e-mail or a cell phone to communicate with other people. Such communication, however, was not efficient. Today, I am able to hold discussions with two or more people at the same time. I believe our productivity and efficiency have considerably improved thanks to the system. The system has also made communication within the company more effective.

The Workwel Communicator is a very important business tool for me because it allows me to work and communicate with other people as if we were in the same office.

Column

The OKI Group's Approach to Universal Design

Universal design is a concept indispensable for the creation of ubiquitous services. The OKI Group defines universal design as the achievement of a high level of usability (basic user-friendliness) and accessibility (considerations for elderly people and people with disabilities) in products and services so that all customers can use them properly, effectively and satisfactorily.

The OKI Group's efforts to enhance usability and accessibility are based on four concepts. First, products must have interfaces that are easy to understand. Second, mental and physical stress on users must be minimized. Third, there must be choices of operating procedures. Fourth, products must be designed in a friendly and attractive package. In order to promote universal design, OKI established a cross-functional organization called the Ergonomics Committee. The committee conducts verification tests and collects opinions from users which help shape products and services.

● Universal Design Intended for the Use of as Many People as Possible

