

Research and Dev

Aiming to Realize an “e-Society” through the Development of Advanced Technology

Ubiquitous Services—“able to satisfy user demands to obtain information, products and services wherever, whenever and with whatever”—continue to expand as the e-Society evolves. OKI supports the development of this e-Society by pushing the boundaries of R&D in five specific areas to provide leading Ubiquitous Services.

Fives Areas of Technological Development in Provision of Ubiquitous Services

- 1. Ubiquitous Networks:** Technology that provides individuals with freedom of activity, anytime and anywhere. Centering on the development of technologies for next-generation networks (NGNs), OKI also engages in the development of advanced wireless and sensor network technologies and inter-vehicle communications technologies that can be applied in the intelligent transport system (ITS).
- 2. Service Platforms:** In addition to R&D in technologies relating to Web 2.0 and SaaS/ASP*, OKI is advancing technological development in such areas as context awareness and mobile security to contribute to the establishment of service platform technology that facilitate effective and efficient provision of Ubiquitous Services.
- 3. Human Media:** For users to enjoy services that are tailor-made in terms of time, place and their individuality, it is essential to have a user-friendly, human-oriented interface. Based on this concept, OKI is conducting R&D in the fields of audio and visual communications to offer ever-higher value to Ubiquitous Service users.

- 4. Ubiquitous Devices:** Toward realizing “More than Moore” products and applications—in other words, pursuing the creation of devices capable of higher performance through means other than microelectronic processing and IC miniaturization—OKI is bolstering the development of e-Function module technologies, which include high-speed signal transmission and high-density mounting. At the same time, OKI is leveraging its high-voltage technologies and those related to low power consumption as well as other competitive advantages to reinforce its LSI-related technologies.
- 5. Mechatronics:** OKI continues to upgrade its ATM-related technologies for overseas markets, while enhancing technologies related to energy-saving, security and universal design that bring higher customer value.

OKI maximizes efficiency in its R&D efforts by delegating basic research functions to its Corporate Research and Development Center and entrusting product development to the development departments of each in-house company’s business division. Also, by promoting Group-wide project cooperation, OKI is accelerating the creation of new technologies and businesses. Research at the level of elemental technology development is promoted through business-academia collaborations.

* SaaS/ASP: Software as a Service/Application Service Provider

World’s First 160Gbps Optical 3R Regenerator for Ultra-Long-Distance Data Transmission

Optical signal regeneration and retransmission is capable of ultra-high-speed signal regeneration of 160Gbps or above for absolutely carefree electrical processing. This is achieved by technology that restores and resends optical signals in their original condition, which have degraded during optical fiber transmission. OKI became the first in the world to succeed in an optically regenerated ultra-long-distance 160Gbps data transmission using a test-bed and already installed optical fibers, verifying that retransmission is possible for 160Gbps data transmission, which is now able to reach the other side of the planet (approximately 20,000km).

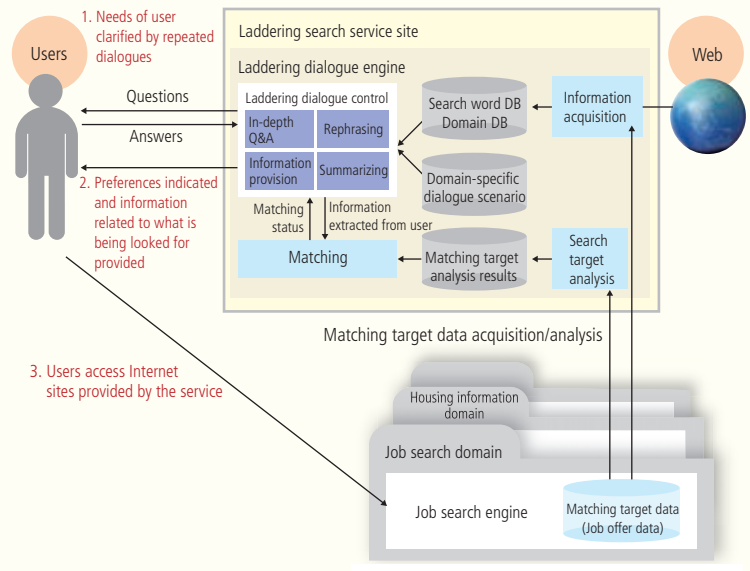
Capable of transmitting four movies (approximately eight hours of data) in a single second, 160Gbps data transmission uses an ultra-high-speed optical communication technology, which is expected to be commercialized in 2010. OKI is currently analyzing the findings from the field trial and making progress with the development of a commercial-use 160Gbps All-optical Regenerator. This research project that led to OKI’s achievement was conducted as part of the “Research and Development on λ Utility Technology,” under the auspices of the National Institute of Information and Communications Technology (NICT).

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Joint Development of Next-Generation "Laddering Search Service"

OKI and Recruit Co., Ltd. are undertaking the joint development of a next-generation laddering*1 search service. In this service, systems ask Internet users questions to extract keywords and expressions from them and thereby pull up the services and content that specifically meet the users' needs from the vast world of the Internet. This service was adopted as the model service for next-generation searching and analysis technology for the fiscal 2007 and 2008 "Information Grand Voyage Project" promoted by Japan's Ministry of Economy, Trade and Industry (METI). Through this joint effort, OKI has developed a laddering dialogue engine, which matches search targets with Internet services and content, by leveraging its extensive technologies in natural language processing, communication, technical term extraction and machine learning. Development is scheduled to commence in the fiscal year ending March 31, 2009 on such technologies as dialogue functions that utilize a full-fledged ontology*2 system, and advanced strategic dialog functions that analyze user feelings and their level of satisfaction and reliability. OKI and Recruit are scheduling experimental trials that post this service to an actual employment information website.

Overview of Laddering Search Service

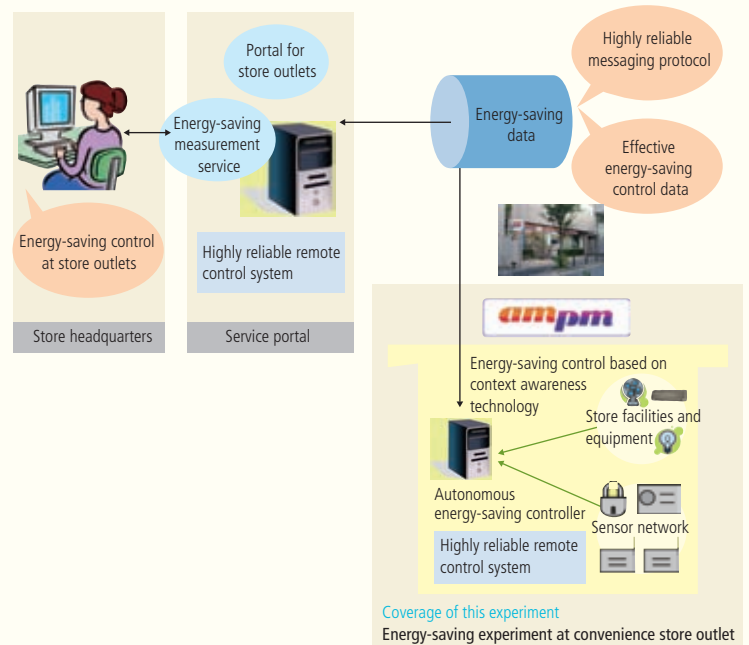


*1 Laddering: A method to extract user needs and values through repeated Q&A cycles

*2 Ontology: a network structure that describes concepts and the relationship between concepts represented by words

Context Awareness Technology test successfully saves energy at convenience stores using wireless sensor network

As a result of an experiment into energy saving conducted jointly with INTAP*1 and am/pm Japan Co., Ltd., OKI proved that annual power consumption at convenience store outlets can be reduced by more than 5%. At present, convenience store operators are implementing energy-saving initiatives for individual facilities and equipment installed at their store outlets. In contrast, this experiment used a new energy-saving method, in which data collected by sensors within ZigBee-based and other wireless sensor networks was informatized, with facilities and equipment centrally controlled through the utilization of a context awareness technology*2. The experiment also focused on improving the comfort levels of workers and visitors to the store. To bring about these improvements, air-conditioning units, lighting and the like were controlled in real time, which also served to reduce power consumption.



*1 INTAP: Interoperability Technology Association for Information Processing, Japan

*2 Context awareness technology: Technology by which computers actively gather and process information relating to user situations and perform situation-specific operations