

# Research and Development

## Promoting Strategic Research and Development from a Medium to Long Term Perspective

Oki's research and development activities are guided by the Oki Technology Strategy. This defines the Group's medium-term and long-term approach to the development of the technologies needed to support the creation of the "e-society" in which all people are able to enjoy enriched and secure lives. Oki has selected specific priorities for research and development such as sound technologies, wireless technologies, human interface technologies, and broadband technologies. The development of sound technologies is vital to the improvement of sound quality in telecommunications equipment, which is a field in which Oki has an important advantage. Wireless technologies are essential for new types of personal and mobile equipment. Human interface technologies help to create devices that will be easier to use. Broadband technologies provide the basis for the convergence of information and telecommunications. Oki is also involved in the development of network service technologies based on the integration and application of technologies in these areas.

Basic research is the responsibility of the Corporate Research and Development Center, while product development for commercialization is handled by the development departments of in-house companies in each area. This division of responsibilities is the basis for a highly efficient product development structure that ensures a prompt response to changing market needs.

### Wideband voice transmission technology — The e Sound IP Phone

Using wideband voice transmission technology, Oki has developed the e Sound IP Phone, which easily surpasses conventional fixed telephones in terms of sound quality. This dramatic improvement in call sound quality allows information to be conveyed



The e Sound IP Phone

more accurately and provides a sense of presence and reality. The e Sound IP Phone has attracted intense interest within the industry as a product that extends the potential of telephone communications.

Future development efforts will focus on a variety of security applications, including the previously impossible task of preventing information leaks from printed documents.

### Realizing the world's longest transmission with an optical encoder/decoder for fiber optic networks

Oki has developed a newly designed optical encoder/decoder for the Optical Code Division Multiplexing (OCDM) transmission system. OCDM transmission systems can transmit large volumes of data, while guaranteeing bandwidth, by allocating a single wavelength signal to multiple communication channels. Using this encoder/decoder, Oki succeeded in becoming the first in the world to transmit data at a rate of 10 Gbps over a distance of 40 km, using OCDM over a single-mode-fiber and no dispersion compensating fiber. Oki plans to introduce both this optical encoder/decoder and an optical transceiver/receiver equipped with this optical encoder/decoder.

### Vehicle-to-vehicle video transmission

Oki, in collaboration with the National Institute of Advanced Industrial Science and Technology (AIST), Meijo University and Kyoto University, has developed the world's first vehicle-to-vehicle video transmission system for traffic information through an intelligent transport system (ITS). The system is based on dedicated short-range communications (DSRC) technology, which is used for communications between roadside wireless devices and vehicles. High-resolution 310,000-pixel video images, which have significantly higher resolution than those used in videophones, are encoded using the MPEG-4 standard and transmitted at 4 Mbps to provide smooth, consecutive transmission. Oki plans to miniaturize the system and improve the user interface in preparation for its commercial launch in the year ending March 2006.

### Developing information and telecommunication converged solutions

Oki and BEA Systems, Inc. have jointly developed the world's first SIP software module based on BEA WebLogic Platform™ operating system. This module supports the convergence of business processes and communications by providing a simple way of adding communications functions, such as IP telephony, video telephony and instant messaging, to Web-based business applications. Oki plans to combine its core technologies, such as VoIP, CTI, security and networking, with the BEA WebLogic Platform™ to create integrated business solutions for supply to users in industries ranging from banking and securities to telecommunications and manufacturing.

### Secure print technology for printed documents

Oki's exclusive secure print technology imprints digital information into printed documents in the form of special tint block. This system allows falsification of the documents to be identified and detected with more than 99% accuracy. Oki has also commenced sales of a software product that applies the same technology to automate data entry based on handwritten questionnaire responses.



Secure print technology