# TECHNOLOGY STRATEGY

OKI's edge devices have supported society's infrastructure with high quality and advanced technology. We are aiming to further increase the sophistication of such edge technology as we promote the utilization of data flowing across the edge to provide increased value. To achieve this, we will promote the building of an "Edge Platform" that enhances data management.

Increasing the Value Provided by Our "Edge Platform"

Since founding, OKI has contributed to increasing the sophistication of social infrastructure, drawing on our strengths of automation, which are built on our network technologies and on our digital technologies for terminal devices. OKI technology used in such fields provides both the reliability necessary to ensure that infrastructure services do not stop and the environmental resistance necessary to ensure operation in extreme environments, qualities we refer to as "toughness." Under "Medium-Term Business Plan 2025," we have defined our "Edge Platform" as a social-infrastructure service enabler that enhances three characteristics: "toughness," "data management" that promotes data utilization, and advanced data processing "AI."

OKI's Edge Platform includes various edge technologies cultivated by OKI up until now, such as real-time sensing technology that combines advanced analog technology and AI technology, high-quality component technology that promotes the self-handling and automation of real services, V2X technology that ensures high reliability at traffic sites, advanced traffic infrastructure technology, and technology that contributes to disaster prevention/marine IoT infrastructure expansion with a high-quality network and high environmental resistance. The diverse kinds of data that come from tough edges such as the above are extremely important in terms of achieving secure and convenient social infrastructure as well as improving productivity and preserving the global environment. By using our platform to connect the above and utilize them cross-sectionally, we will not only help to solve the problems faced by specific sites but also contribute to strengthening and increasing the efficiency of society as a whole.

The figure on the upper right shows the positioning of OKI's technology, with toughness on the vertical axis and
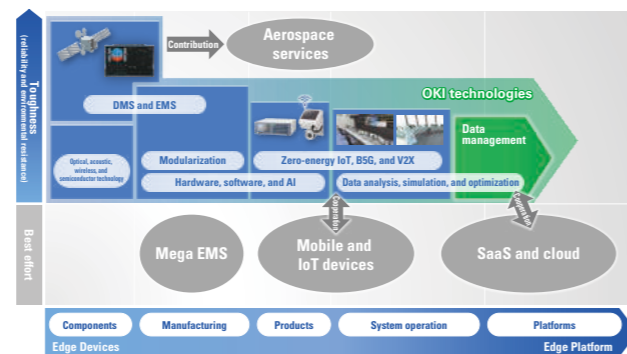
OKI technology position map

the technology value chain on the horizontal axis. In terms of OKI's components, we have achieved the high reliability and toughness necessary to use the components in extreme aerospace and marine environments. Regarding normal social infrastructure—for which the ongoing provision of services is important—we have achieved the comprehensive toughness suitable for operations and maintenance.

Regarding operations, data that enables an understanding of the on-site situation is important, but we also expect to be able to provide increased value by moving such data to our platform and combining it in advanced ways. For example, through the dual use of infrastructure monitoring for disaster prevention and reduction as well as integrated analysis of data covering multiple regions, it will become possible to detect, predict, and otherwise understand various events for which such efforts would have been difficult using isolated data. To achieve such value expansion, we will promote enhanced data management in line with our platform.

Edge Platform

Efforts to Promote Data Management

To provide increased value through cross-sectional data utilization, we launched a full-time data management organization in April of 2023. Because the added value of edge data is affected by the data acquisition scope, we will conduct a level-specific analysis of OKI's various business positions based on both the scope and the data utilization depth, and we will promote enhancement in terms of both of these axes. In addition, we will take steps that include establishing contract guidelines that clarify the data acquisition scope as well as building a data lake platform that makes it easy to store and analyze data on our Edge Platform while also developing highly data literate human resources regardless of their positions.

Analog + AI Initiatives

Initiatives for Advanced Analog Technology
• Photonics Technology

OKI is utilizing its original optical-part miniaturization and high-density mounting technology as well as its FBG (Fiber Bragg Grating) fabrication technology to develop high-sensitivity optical fiber acoustic sensors that are used underwater and receive acoustic waves coming from all directions. We are promoting the use of these sensors both for Ministry of Defense sonar systems and applications related to civilian life.

In terms of future research, we are considering working on silicon photonics technology for comprehensively mounting optical circuits, conventionally built using optical parts and optical fibers, on several-millimeter-square silicon chips as well as possible applications in fields that include optical transceivers, laser vibrometers, and optical fiber sensor systems. We are also taking on the challenge of developing optical biosensor technology capable of high-speed virus detection.
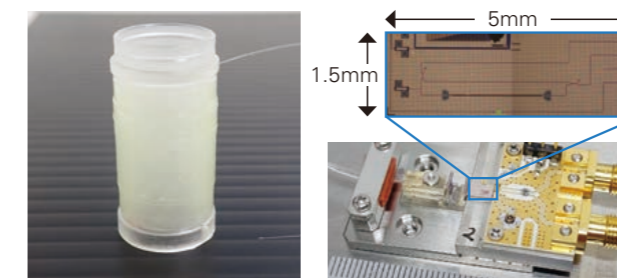
Optical fiber acoustic sensor   Laser vibrometer core circuit

• Millimeter Wave Radar

We are developing millimeter wave sensing technology capable of detecting the position and speed of a wide range of vehicles, people, and other objects regardless of the environment—including the usage location and weather—in real time. We are also utilizing OKI's original antenna/RF circuit to improve the performance of both the detection distance and object recognition.


Millimeter wave antenna and RF boards

Initiatives for Various AI Technologies

OKI develops ASICs that contribute to edge AI implementation as well as AI Edge technology that emphasizes real-time processing as AI technologies for achieving advanced data processing. In addition, the Company researches and develops mathematical optimization technology that aggregates edge data to optimize social infrastructure.

In terms of AI Edge technology, OKI researches and develops technology for recognizing multimodal data obtained from various sensors as well as technology that miniaturizes AI models. We will also contribute to the utilization of AI in edge domains, including monitoring at various infrastructure sites. In addition, we will develop ASICs that enable high-speed, energy-saving AI processing and expand their applications to include OKI's printers and various other hardware products.

In terms of mathematical optimization technology, we are researching and developing topics that include the utilization of quantum computers to achieve the high-speed solving of optimization problems—which require an enormous number of calculations—as well as traffic congestion and traffic flow prediction based on the analysis of traffic probe data obtained from ETC2.0. As one result of such efforts, we have implemented LocoMoses®, a delivery-route optimization service for logistics companies.

We have also been researching and developing generative AI technology—a subject of much attention in recent years—including the automatic generation of learning data via generative image AI as well as incorporating generative AI technology into applications, such as multimodal AI for expressing the information of multiple sensors in the same place. In addition, we provide large-scale language models and other services that can be safely used in-house to foster the literacy necessary to effectively utilize generative AI for various kinds of work.
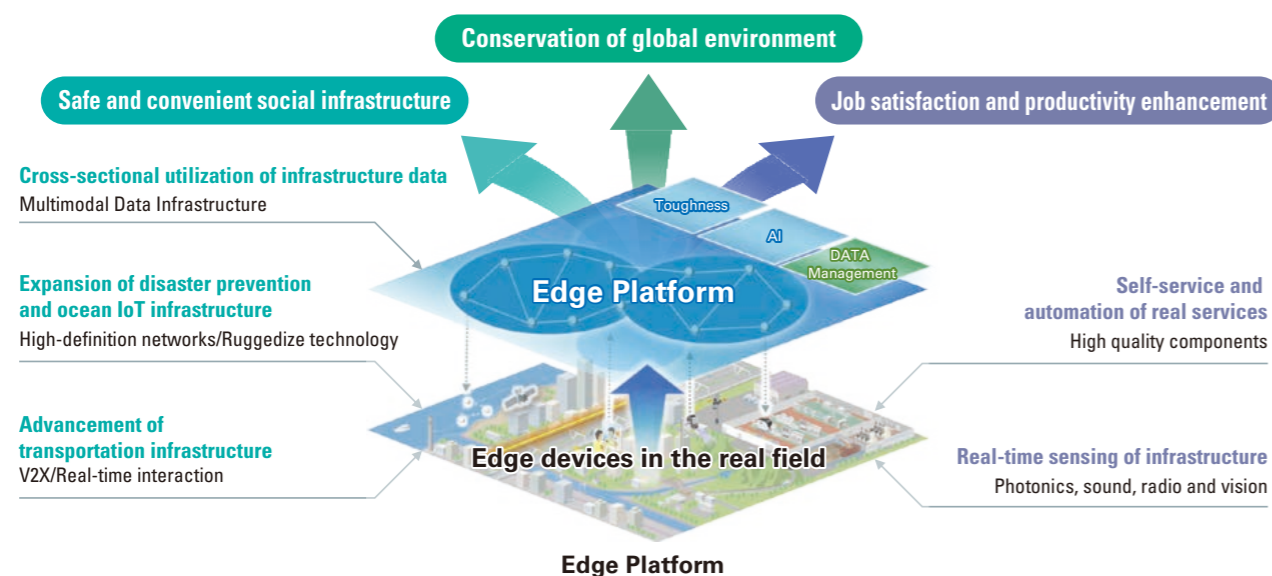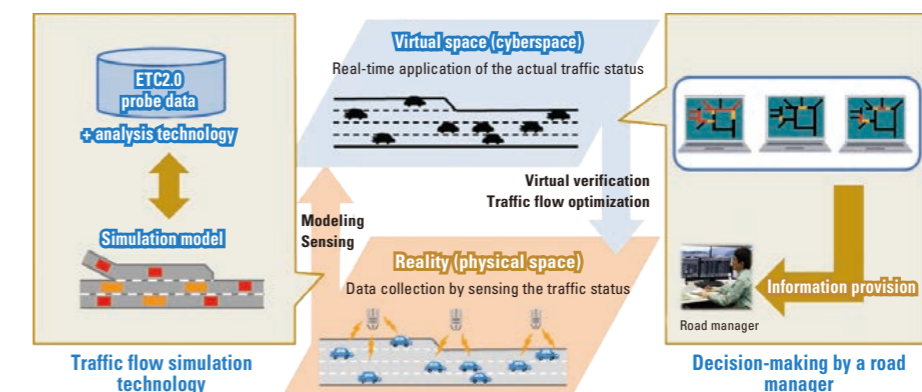
Optimization AI technology: traffic flow simulation based on traffic probe data