TECHNOLOGY STRATEGY

OKI is promoting foundational improvements from the human resource and governance perspective to further enhance and achieve the suitable and advanced use of its focus technology AI Edge. To flexibly respond to changes while promptly proposing value to customers who face diverse social issues, we are also working on practicing a research and development management process based on our Innovation Management System (IMS) "Yume Pro."

Our Focus Technology AI Edge and the Yume Pro Process

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. Going forward, we intend to incorporate recent advances in AI technologies into OKI technologies installed in edge i.e. on-site domains, and we have established AI Edge as our focus technology.

Under Medium-Term Business Plan 2022, we have defined five cutting-edge technical fields that will enhance the above. These fields include sensing—which involves seeing critical sites clearly—networking—which involves safely communicating information to every location, including both urban and mountainous areas—intelligence—which involves using AI to strengthen intelligent infrastructure—robotics—which involves approaching people and things at the edge to provide detailed site support—and user experience—which involves empathizing with people.

These five fields are managed within our research and development division by using our Yume Pro technology process, which was formulated in fiscal year 2020. We have defined the five stages described by the IMS international standard ISO 56002—identify opportunities, create concepts, validate concepts, develop solutions, and deploy solutions—as technology steps (T Steps) 0 to 4, and we are promoting a total of 35 projects (as of June 2022).

During the validate concepts stage (T Step 2), concepts that have reached a certain level of maturity are refined on

Our focus technology AI Edge

site, such as by verifying their value. This step covers the 11 projects shown in the figure, and the work includes both verification via on-site trials centered on the Group's manufacturing division (in-house utilization) and further verification in collaboration with our co-creation partners. Regarding projects closely related to existing markets in which OKI has business, we aim to achieve co-creation with partners that have installed bases through cooperation with relevant business divisions, and, regarding projects for which the goal is new markets, we aim to win new partners and achieve co-creation through cooperation with our marketing & sales section. The figure shows specific examples of co-creation partners by industry in the case of each topic, and we are aiming to efficiently externalize our results by implementing co-creation starting at the research and development stage.
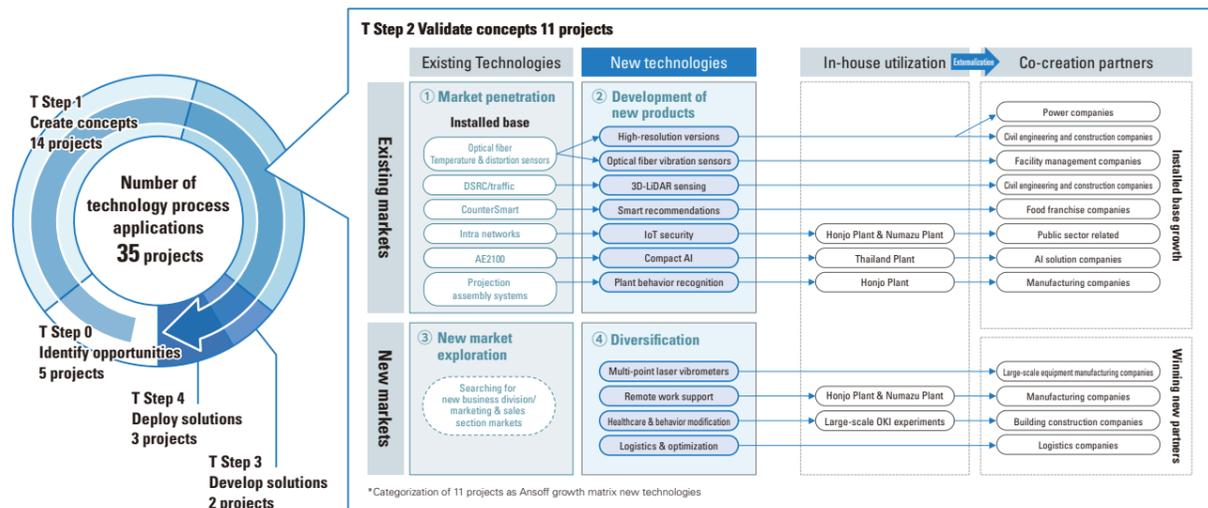
The Yume Pro technology process and the validate concepts step

Optical Technologies

OKI conducts research and development related to optical technologies in the networking field, including large-capacity optical access technologies based on silicon photonics as well as PON virtualization technologies. In recent years, we have expanded our strengths in terms of such optical technologies to the sensing field, and we are commercializing optical fiber sensing capable of simultaneous long-distance, wide-range temperature and distortion measurement.

In terms of our research and development, we are taking on the challenge of creating new value, including higher resolution optical technologies and the application of such technologies to vibration measurement, multi-point laser vibrometers that use laser light irradiation, and optical biosensor technologies for which silicon photonics are applied to the high-speed detection of viruses and other biomolecules.

PON virtualization technology verification system

Optical biosensor

Initiatives for Improving AI Foundations

In addition to developing technologies to achieve AI Edge enhancement, we are also striving to respond to various issues related to AI provision by improving AI foundations. Based on our OKI Group AI Principles, which were established in September of 2019, we are focusing our promotion on two tasks in particular: developing AI governance to respond to risks related to ethics and quality and developing human resources capable of fully utilizing AI.

In order to ensure that our customers can securely use OKI's AI, we have added regulations related to the provision of AI products to the quality management system included in our Solution Systems business and started to enforce them. We have also incorporated perspectives unique to AI into contract and quality checks while also adding checks for legal and ethical risks at the beginning of each project.

In terms of human resource development, we have continuously provided AI literacy education—which gives our employees the opportunity to acquire basic AI knowledge—since fiscal year 2020, and, as of the end of fiscal year 2021, a total of over 7,600 employees had attended these classes. In addition, we implement hands-on workshops to help employees learn how to identify risks associated with AI utilization, and these have been attended by a total of over 500 employees.

Regarding technical issues, to train AI technicians with practical skills, we collaborated with Chuo University to establish the AI/Data Science Social Implementation Laboratory in an effort to implement practical education by resolving actual issues, and the laboratory conducts activities based on 11 projects (as of July 2022) presented by our research and development division as well as our business divisions and marketing & sales section. In addition, we have added a curriculum including participation in an external competition to compete for the highest rank to our technical training, and we are also striving to enable small groups of people to master and apply AI technologies in order to resolve workplace issues.

Through the above initiatives, OKI's number of AI technicians with practical skills exceeded 310 by the end of fiscal year 2021. This was way ahead of our goal of having at least 300 such technicians by the end of fiscal year 2022.
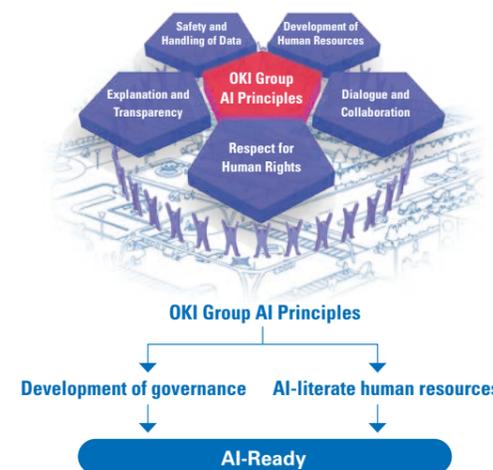
Overview of the improvement of AI foundations

Category	Measure	Main initiatives in FY 2021
Governance	Establishing regulations on the quality process for providing AI products (November 2021)	Incorporating perspectives unique to AI into contract and quality checks
		Checking legal and ethical risks specific to each project
Development of human resources	Deepening the understanding of AI	Ongoing AI literacy education for all employees
		Hands-on workshop training related to the identification of AI risks
	Increasing the number of AI technicians with practical skills	Utilizing an external competition as a training curriculum
		Using AI to resolve workplace issues based on small groups of people