

Achieving Safe and Secure Lives for All and Social and Environmental Stability



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The world faces many emergent, escalating social issues and risks, including increasing natural disasters due to climate change, political unrest in Ukraine, the Middle East, and elsewhere, cyberattacks disrupting business continuity, growing economic security due to international tensions, and the worsening digital divide creating further inequality. The deal at the 2023 Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC), more commonly referred to as COP28, called for further enhancement and the implementation of concrete climate actions. Furthermore, while the rapid spread of generative artificial intelligence (AI) is expected to spur innovation and improve productivity, it also poses ethical concerns and drives a surge in energy consumption.

In keeping with the Basic Commitment of the Toshiba Group stating, “Committed to People, Committed to the Future,” we aim to provide solutions to increasingly complicated social issues through our business activities and contribute to the achievement of carbon neutrality and a circular economy while ensuring both “safe, secure lifestyles for everyone” and “social and environmental stability.” We see the idea of “Software Defined” as a key to innovation and establish our strategy to create new value through the following successive stages: (1) digital evolution (DE) to digitize value chains, (2) digital transformation (DX) to provide platforms for services, and (3) quantum transformation (QX) to connect multiple platforms using quantum technology.

Our DE, DX, and QX initiatives have begun to bear fruit. For example, we have developed spatial digital twins combining a light detection and ranging (LiDAR) with an AI for high-precision fusion of two-dimensional (2D) and three-dimensional (3D) LiDAR data. We have also established technology that uses millimeter-wave radar to detect and visualize potentially dangerous objects as people walk through checkpoints. Furthermore, we have built a platform that facilitates development of various security solutions for public spaces in open operation environments, which is derived from modular devices and software-defined concept. We have also demonstrated quantum key distribution (QKD) via an existing commercial network. The

SQBM+ service, a quantum-inspired optimization solution, is now being applied to securities trading and computational drug discovery.

TOSHIBA REVIEW Science and Technology 2024 provides snapshots of some of the results of our latest R&D initiatives related to carbon neutrality, social infrastructure resilience, and the power of digital data as well as the results of our development efforts and topics related to the products and services in each of our business areas.

In 2023, the Toshiba Group made a historic move to be delisted from the stock exchanges in Tokyo and Nagoya, seeking renewed growth. The statement “We welcome orders for inventions of all types of machinery” that Hisashige Tanaka, one of the founders of Toshiba, left approximately 150 years ago, embodies our tradition of addressing all customer needs based on our technologies. Returning to this basic philosophy, we will leverage our technologies to offer solutions to contribute to achieving a sustainable society while continuing to take on new challenges.

We hope that you will enjoy reading *TOSHIBA REVIEW Science and Technology Highlights 2024* and, as always, we appreciate your feedback, suggestions, and comments.