

Message from the Chief Technology Officer

The R&D Division celebrated its 100th anniversary in 2018. Inheriting Hitachi's corporate credo and founding spirit, our R&D operations support the goal of Hitachi being "an Innovation Partner for the IoT Era," while also driving the future growth of the company by addressing societal issues.

Norihiro Suzuki
 Vice President & Executive Officer
 Chief Technology Officer (CTO)



R&D Initiatives Targeting Social Innovation Business Expansion

In fiscal 2015, to promote global R&D centered on collaborative creation with our customers, we established the Global Center for Social Innovation (CSI) in five key regions, setting up bases in Tokyo, North America, China, Europe, and Asia-Pacific (APAC). Using a systematized collaborative creation methodology called "NEXPERIENCE," CSI researchers share their vision directly with customers as part of a process of original value creation that ranges from identifying issues to testing solutions and creating practical business models. At the same time, positive

steps are being taken to help upgrade and expand digital solutions that employ Lumada.

I believe this process is creating positive feedback cycles, in which resolving customer issues helps us to reinforce Hitachi's core technologies while at the same time generating knowledge to support new business development based on accumulated customer cases. We are upgrading our focus on open innovation approaches as a way of expanding such initiatives globally, for example by building ecosystems that span industry, academia, and the government sector.

R&D Investments for Enhanced Efficiency

Hitachi invests approximately 4% of revenues into R&D on the four focus business domains that drive the Social Innovation Business, as well as open innovation and other projects. I would emphasize the fact that our investment in open innovation in fiscal 2018 was over 60% higher than in fiscal 2015. The establishment of the CSI enables us to work

with customers from the research stage to develop the technology for products and services that address societal issues, thus boosting the efficiency of our R&D. Moreover, we are looking to make R&D even more efficient by shortening development time by leveraging AI and other digital technologies for our research work itself.

Fiscal 2018 R&D Policies

Becoming a Global Innovation Leader to Drive Evolution Towards a Global Company	
Objectives	Policy Directives
Strengthen monetization capabilities to expand the Social Innovation Business	Enhancing collaborative creation of global solutions <ul style="list-style-type: none"> • From individual solutions to connected industries • Focus on growth domains and regions
Increase world-leading products and services	Creating and focusing on world-leading technology <ul style="list-style-type: none"> • Create world-leading technology to support the Social Innovation Business • Accelerate open innovation
Participate and engage with global community	Promoting basic research to resolve societal issues <ul style="list-style-type: none"> • Accelerate creation of disruptive technology • Create vision to lead "Society 5.0"

Enhancing Collaborative Creation of Global Solutions

To drive the evolution of our collaborative creation efforts with customers, we are looking to develop new “Connected Industries” solutions that can generate greater value than those for individual solutions, and those that can connect a variety of solutions in different industries for multiple customers. One practical example of this is an initiative where small- and medium-sized customers in industrial sectors and financial institutions manage and share global supply chain information.

Creating and Focusing on World-leading Technology

The R&D Group is also actively trying to create world-leading technology to support the Social Innovation Business. For example, our development of high-speed rolling stock and traffic management systems to enhance railway safety, comfort, and convenience is helping Hitachi’s business growth in Europe. Elsewhere, we are applying fluid analysis technology developed in the railway field to improve compartment design to help achieve the world’s fastest elevator. In the industrial sector, Hitachi has secured a world-first with the development and commercialization of a compact and energy-efficient amorphous motor-integrated oil-free scroll compressor. Going forward, we aim to develop world-leading technologies in fields such as blockchain, autonomous vehicles, smart manufacturing, AI, and robotics.

For the creation of world-leading technology, it is necessary to enhance the value offered by Hitachi’s OT, IT, and products with the utilization of digital technologies. For that, it is also important for us to strengthen our human capital. Aiming to increase the number of data scientists working throughout the Hitachi Group to at least 3,000 by fiscal 2021, we have

Promoting Basic Research to Resolve Societal Issues

Communicating a vision for the future and creating disruptive technologies are both essential to resolving societal issues. Hitachi has established joint R&D centers with the University of Tokyo, Kyoto University, and Hokkaido University to develop visions to support realization of the “Society 5.0” concept. The laboratories established with these three institutions are focusing on different topics, namely urban planning and energy (Hitachi University of Tokyo Lab), issues facing society in 2050 (Hitachi Kyoto University Lab), and regional issues and food/health (Hitachi Hokkaido University Lab). Each lab is also responsible for related global communications. We are working to identify practical research topics within these initiatives, and converting research findings as a major source of potential business opportunities. Efforts to create disruptive technologies include a project to develop quantum computing with UK-based Cambridge University, and a regenerative medicine project based at the Kobe Biomedical Innovation Cluster. I see these initiatives helping to lay the foundation for Hitachi’s new businesses of the future.

Besides patent activities to reinforce product businesses, we are promoting novel intellectual property (IP) activities to support ecosystem construction. Our IP programs are incorporating data and other information assets to help

Utilization of a blockchain platform to digitize order-related information from customers to suppliers can improve the operational efficiency of procurement and inventory management, while also facilitating faster decisions by the financial institutions relating to aspects such as settlement and funding. By focusing on growth domains and societal issues across global regions, we are helping to expand the Social Innovation Business-related collaborative creation.

instituted a training program and established the Professional Community to support top-class researchers and practitioners from every field. In this online community initiative, the R&D Group plays a major role in driving the continued evolution of core technology development and value creation.

In addition to internal efforts to strengthen human capital, we are investing in the development of technology platforms through an open innovation R&D consortium, based on collaboration with research institutions, academia, open community partners, and start-ups both in Japan and overseas. Through our open community initiatives, we are actively involved in open-source projects and a consortium in fields such as blockchain and edge computing, and have also joined Hyperledger, a project sponsored by the Linux Foundation as well as the Edgex consortium. Through Geodesic Capital, a venture capital firm in which Hitachi owns an equity stake, we are also promoting collaboration with start-up ventures. We are accelerating the creation of world-leading technologies through such activities and initiatives.

accelerate the development of digital solution businesses based on AI, analytics, and other digital platform technologies.

Through these R&D activities, I am confident that we will contribute to the growth of Hitachi and the SDG No.17 target “Partnership for the goals.”

SDG Focus



Historical/Projected R&D Expenditure

