Preface

R&D Leading Social Innovation through Global Collaborative Creation with Customers

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In this age of uncertainty that we are living in, the linear model whereby technology is developed at a research center and commercialized by operational divisions for delivery to customers is becoming less and less viable. Research and development is one of the areas where there is a strong need to proceed with innovation in a timely manner by pivoting as the circumstances demand while adopting unique design concepts that derive from the challenges facing customers, coming up with new insights or ideas, then working with customers to develop hypotheses and build actual prototypes of products or services while testing the market's reaction.

To meet the needs of this era, Hitachi undertook a major reorganization of its research and development (R&D) organization in April 2015, targeting collaborative creation with customers, technology-driven innovation, and exploratory research as the three pillars of its research strategy, and establishing its Global Center for Social Innovation to take a leadership role in working closely with customers; its Center for Technology Innovation to work on technological innovations in the fields of artificial intelligence (AI), the Internet of Things (IoT), robotics, security, and sensing in particular; and its Center for Exploratory Research to deal with R&D that can help solve the future challenges facing society.

Now, as we enter the second year of this customer-driven approach to R&D, the benefits are starting to emerge. Examples of collaborative creation with customers include the use of AI for demand prediction in retailing and the automation of warehouse operations using Racrew driverless vehicles, as well as helping to win an order for a railway traffic management system in the UK. Technology-driven innovations include the installation of the world's fastest elevators in an ultra-high-rise building in Guangzhou, China, and the supply of high-speed rolling stock to the UK, which has also become a major talking point. In the area of exploratory research, Hitachi has successfully built the world's highest performance electron microscope, and we also won a Nikkan Kogyo Shimbun Best 10 New Products Award for the analysis of human big data collected using wearable nametag sensors. We are also actively participating in open innovation to resolve the challenges facing society, including the establishment of embedded laboratories at universities and other research institutions in Japan and elsewhere, starting with the "Hitachi The University of Tokyo Laboratory," which is working toward the creation of a "Super Smart Society."

Hitachi is currently tackling the challenge of developing Social Innovation Businesses that make use of digital technology focusing on the four categories of Power/Energy, Industry/Distribution/Water, Urban, and Finance/Public/Healthcare, with an organizational structure based on 12 “front” (customer-facing) business units. Supporting these initiatives is the Lumada IoT platform announced in May 2016. We are delivering new value by using Lumada to link together existing customer systems and data as well as value chains. What makes this possible is none other than the extensive experience and know-how that Hitachi has built up in the field of social infrastructure.

This issue of *Hitachi Review* presents recent R&D work together with examples of solutions resulting from collaborative creation with customers, and also covers the ethos that researchers have handed down from the past in an unbroken chain and that serves as the source of this success. I hope that this issue helps readers to appreciate the new challenges Hitachi is taking on as it takes the lead in the era of the IoT, the frontline of its R&D efforts, and the immutable spirit that underpins these.