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 Vice President and Executive Officer
 CTO and General Manager,
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 and Power & Info Control Platform Division
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Chief Technology Officer

CTO Message

Establishing a position as a prime vendor capable of providing everything from hardware to software.

[Enhanced Development System]

Strengthen Internal Resources and Increase Development Speed Through Open Innovation

I served as president of Hitachi Construction Machinery Tierra until March 2022, after which I was named CTO and general manager, Research & Development Group, being responsible for Hitachi Construction Machinery Group / HCM Group development. The Hitachi Construction Machinery Group has been transitioning to a business unit system since April. The role of the Research & Development Group is to first identify changes among our customers, society, infrastructure technology, and product technology as quickly as possible. This allows us to set the overall direction of development, after which we obtain the buy-in of each business as part of our cross-disciplinary functions. The objective of each business unit is to grow its own business. The objective of the Research & Development Group Division is to support the value creation of each business unit. The Power & Info Control Platform Division is an organization with central responsible for technology development related to all products, including hydraulic components, electronic control, transmissions, software, and machine chassis systems. The division is responsible for key technologies that differentiate the performance and functionality of our chassis, and is responsible for the integrated development of components. Many specialized manufacturers of these technologies exist outside the company, as do start-ups working in new fields. We intend to collaborate actively with these entities to accelerate development.

The engineering building currently under construction at the Tsuchiura Works will serve as a central base for engineers who will share the same floor space with our ubiquitous development hubs. As of April 2022, I have been working in several develop-

*Connected: Permanently connected to the internet.

ment offices scattered throughout the vast grounds of the Tsuchiura Works. I have been moving from one office to another, including hydraulic components, electronic controls, machine chassis, and production technology. I believe our engineers have much to gain by gathering in the same workspace. The new building will serve as a creative space, and we look forward to its opening in May 2023.

Our overseas development centers are located in Europe, China, India, Southeast Asia, and other areas. The European Application Center GmbH (EAC), which we established two years ago in Germany, develops electric construction machinery, advanced operator assistance technology, and applied attachment products that meet European needs. We plan to deepen cooperation between Japan and these overseas centers and development teams. North, Central and South America represents the world's largest market. Having begun independent expansion in this market in fiscal 2021, we expect great potential not only in production and sales, but also in development. The U.S. is home to many cutting-edge connected* companies with whom we would like to work in building an innovative development system.



STEP to 2030: Our Vision for 2030

As of 2019	Current Medium-Term Management Plan	Our Vision for 2030
<ul style="list-style-type: none"> Responding to Individual Changes Strengthen Solutions Development (Chassis/Non-Chassis Products) Strengthen Development of Advanced Products (Human Resources Development, Electronification, Platform Construction) Contribute to increased Earnings Throughout the Value Chain (In-House Production of Key Components, ConSite Collaboration) Diversify Development Styles (Agile Development, Open Innovation, Etc.) Strengthen Front-Loading* <p><small>*A development method that incorporates customer needs and technical issues in the early stages of development. Our objective is to develop highly complete products over shorter development periods.</small></p>	<ul style="list-style-type: none"> Establish and Implement Responsiveness to Change Respond to Changing Customer Values Deepen Product Development to Generate Profits Throughout the Value Chain Conduct Ground-Up Review Development Capabilities (Build and Implement Development Structure) Prevent Global Warming 	<ul style="list-style-type: none"> Establish Industry-Leading R&D Capabilities Establish a position as a prime vendor capable of providing everything from hardware to software Improve safety Improve productivity Reduce life-cycle costs Prevent global warming Respond to globalization (bipolarization)

[Areas of Advanced Development]

Accelerating Technological Development in Five Priority Areas Based on Our Vision for 2030

The R&D policy of the Research & Development Group is to maximize social and environmental value through the pursuit of reliable solutions. And our Vision for 2030 is to establish the top R&D capabilities in our industry. To achieve this vision, we established five priority areas and a roadmap, created through back-casting from our ideal.

Among the five priorities, we consider (5) Respond to globalization (bipolarization) to be particularly important. The developed economies such as Europe and the U.S. have demand for advanced operator assistance technology and robot technology for advanced safety and productivity functions. To win in these markets, the Hitachi Construction Machinery Group must develop a model for developed economies that integrates reliable solutions and connected technologies. At the same time, the markets for civil engineering are expected to grow in countries and regions where demand for infrastructure development is increasing. Here, we must develop a high-productivity model for emerging economies. This productivity is the single-most important factor for construction machinery. If we are to make a significant contribution to customer value chains, it is essential that we provide construction machinery that offers superior performance. With respect to (4) Prevent global warming, which includes decarbonization, we are seeing more customers around the world who demand mini excavators, medium and large hy-

draulic excavators, and dump trucks. In Europe, where demand for electric excavators has always been very high, we are already selling an electric 8-ton class excavator. In April 2022, we opened the Electric Products Development Center to strengthen development in this area further. The bottleneck to decarbonization technology is the development and procurement of batteries for construction machinery. The key here is how to develop a battery module specifically for construction machinery without increasing costs. While the battery itself is the same for automobiles and construction machinery, each power supply module requires a different technology. We are looking to collaborate with battery manufacturers not only in Japan, but also in China and Europe, aiming to develop products in physical proximity to each market.

A platform will be just as important as the performance of the construction machinery itself. We intend to develop and market hydraulic excavators linked to communications infrastructure through software on a highly functional platform that allows humans and machinery to work in harmony. Conventional construction machinery is sold to customers as a finished product. In the future, however, we believe construction machinery will function like smartphones, connected to a network. And digital technology will allow us to provide products and services that enhance customer value under all circumstances.

[Investments in Research and Development]

Aggressive Expansion of Investments to Stay Ahead of Global Change

Our goal in these various priority technology developments is to anticipate and "attack" medium- and long-term market changes. To this end, we must transform our R&D and value creation, and we intend to invest more aggressively than ever in human resources for R&D. We will also invest more aggressively in partners who will collaborate with us toward the same vision.

I have been involved in construction machinery technology and business development for many years, but I have never experienced an environment like the one we are in today. Change

is coming rapidly from all directions, including digitalization, decarbonization, AI, and IoT. To anticipate these changes accurately and continue to provide value to our customers, we must visit our customers personally on the front lines of their businesses, and rely on our own ingenuity for change. The shift to a business unit system will allow us to become even closer to our customers. And I hope we will create new value and evolve quickly into a construction machinery development group that leads the next generation.