

# FOOD VALUE CHAIN

## Combining technologies and ideas to provide new value and contribute to a society where all people can live safely and with peace of mind

Food is essential to human life. Together with our business partners, while observing the entire food value chain, we will provide solutions that deliver food safety and security to each region of the world, anytime, anywhere, and to anyone, forever.



**Hidehiro Yokoo**  
Head of Food Value Chain Business Development Division

### Business Strengths

**Greenhouses That Ensure Reliable Harvests While Dealing with Labor Shortages and Climate Change**

By applying our *Monozukuri* technologies gained with automobiles to agricultural production, we are supporting technologies that condition environments for reliably harvesting agricultural products. We introduce automation technologies to create environments where people can move around easily, and globally supply solutions for greenhouses in a highly productive way that sustains growth.

**Portable Compact Freezer/Refrigerators That Help Deal with Driver Shortages and Delivery Diversification**

We provide portable freezer/refrigerators by utilizing heat control technologies developed for automobiles and by creating compact, light versions of conventional automotive freezers. Our battery-powered products allow non-specialized drivers with passenger cars to flexibly deliver a range of small-lot items without using engines or dry ice for freezing or refrigeration, which reduces CO<sub>2</sub> emissions.

**New Distribution DX Solutions That Reflect Changing Needs in Food Distribution**

Utilizing the QR Code® and RFID technologies, which we developed in frontline manufacturing operations, we are digitizing diverse information related to food in order to visualize food distribution information from production to sale, in response to consumer needs for safe and secure food. We also offer a straight-through food distribution platform that facilitates supply-demand optimization in distribution operations and rightsizes inventories.

## Resolving Social Issues through Our Businesses



### Stabilizing Food Production by Introducing Industrial Approaches to Agriculture

Concern is growing over the food shortages that could result from instability in agricultural production due to climate change and a global decline in farming populations. In the field of horticultural facilities, we aim to utilize our vehicle manufacturing technologies to facilitate the introduction of industrial approaches to agriculture, thereby enabling anyone, anywhere to realize stable agricultural production.

Specifically, we have partnered with the Dutch company Certhon Build B.V., which possesses leading-edge horticultural facility technologies. By combining these technologies with our automation, environment control, and digital transformation technologies, we will create and globally market highly efficient greenhouses suited to the characteristics of each region.

Also, DENSO will contribute to regional revitalization through the realization of sustainable agricultural production. Based on a comprehensive partnership agreement concluded with the city of Date in Hokkaido, we plan to develop a business that will become a model for regional revitalization. The new business will use environment control technologies to achieve year-round cultivation of high-quality crops, foster next-generation agricultural personnel through the introduction of a remote cultivation system that digitizes greenhouse data, and utilize local resources to establish low-carbon agriculture.



Greenhouse for medium-sized and large farms



Robot for automated tomato harvesting

### Promoting Local Production for Local Consumption through Temperature-Controlled Logistics and Product Exchanges between Roadside Stations

Based on a comprehensive partnership agreement with Kumamoto Prefecture, we are conducting verification tests of a model in which portable compact freezer/refrigerators are used for the exchange of products between roadside stations (rest stops). By enabling the transport of fresh food products between these stations, the model will solve the problems of opportunity losses due to insufficient stocks of fresh food products and waste due to surplus stocks. As a result, the model will encourage local production for local consumption and reduce food waste.



Portable compact freezer/refrigerator

### Enhancing the Product Branding of Municipal Authorities through Production Source Verification Systems

We are contributing to safety and peace of mind in relation to food through the use of a QR Code® to visualize food distribution data. In response to the problem of the intentional mislabeling of short-necked asari clams to falsely show Kumamoto Prefecture as their production region, we have collaborated with the prefecture to jointly develop and introduce a system that uses our QR Code® to certify the production region. Thus, the system delivers safety and peace of mind to consumers by ensuring traceability from production through to sales. Going forward, we plan to roll out the system for a wide range of other regional products.



Rendering of the QR Code® being used to read production region data