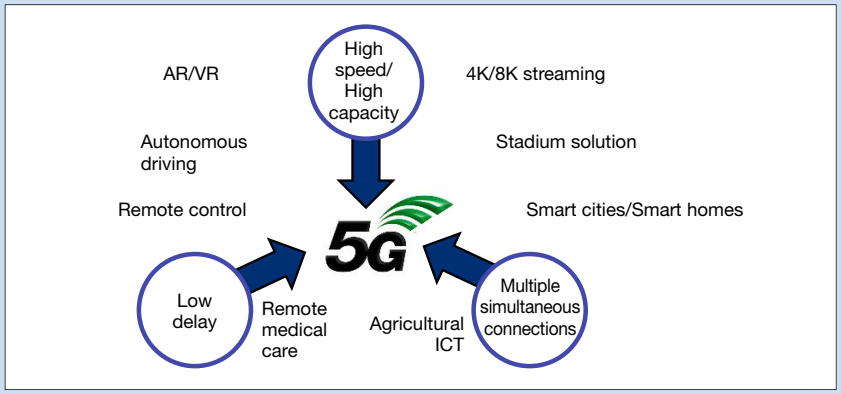
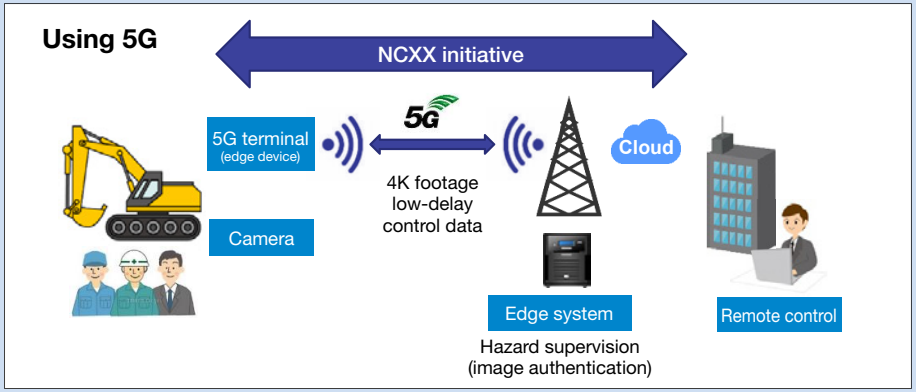
Feature Device Business Initiatives for 5G Next-Generation Communications

NCXX aims to expand its presence in the M2M field by leveraging the communications technology assets it has cultivated in its device business, its core business. Commercial 5G service will start in Japan from March 2020. With 5G, “high speed/high capacity,” “low delay” and “multiple simultaneous connections” will become a reality, and it is expected to have an impact on a wide variety of industries. In the age of IoT, when all manner of things can be connected, services will roll out flexibly whether in urban or rural areas and expectations are high that it will resolve local community issues and aid in regional revitalization. As a communications device manufacturer, NCXX is pushing into new fields, and launches products that not only support LTE products, but also products that support 5G, which are expected to expand going forward.



NCXX’s Initiatives in the 5G Field

NCXX utilizes its strength in the field of BtoB communications adapter module sales to strengthen planning such as real-time remote-control operation of construction machinery using high-quality images, control various types of equipment and provide solutions combining the use of 5G devices collecting big data and deep learning image authentication techniques, as well as developing application services.



■ Image authentication technology

In the past few years, AI learning models have been incorporated into devices closer to the field in step with the evolution in the processing performance of semiconductors, and predictions that were previously performed in the cloud can now be carried out on the edge device side. The Company is working to develop high-performance edge AI devices. These devices will be integrated with telecommunications technologies in the device business and be capable of processing data in near real time and will utilize telecommunications technologies to send results to the cloud.

The Company’s edge AI devices are expected to be deployed in a variety of fields such as visual merchandising reflecting privacy considerations, and the nursing care, healthcare, agriculture, manufacturing and infrastructure sectors.

Image recognition for foods
Image recognition for foods can be used for tasks such as visual external inspections, identification of defective products, and sorting of products by size, and offer the benefit of preventing errors such as a failure to notice something.

Image recognition for manufacturing
Image recognition for manufacturing can be used for visual external inspections and product inspection work, including inspection of elements such as packaging printing, damage, and wrong colors.

Image recognition for maintenance and management
Image recognition for maintenance and management can identify abnormalities even in places that are difficult for people to reach, via aerial images captured using drones and other devices, and can be used to support inspections.

■ Agricultural ICT: Creating a new business model for agriculture

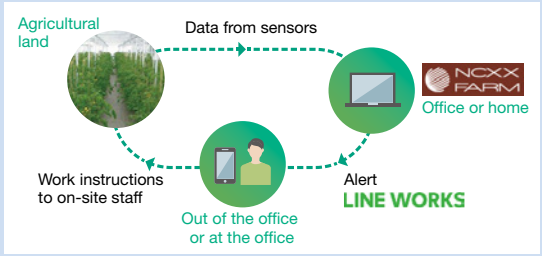
The Company aims to enter into a broader range of M2M fields, leveraging the telecommunications technology assets developed in its core device business. As one specific example of these efforts, we seek to make ICT a key force in agriculture through the agricultural ICT business. This business integrates new agricultural techniques and facilities with technologies in each of these areas. Through these efforts, we aim to create a new agricultural business model.

In the agricultural ICT business (NCXX Farm), one of the Company's key areas of focus, we provide end-to-end support to producers in activities ranging from growing to sales. We have been advancing research and development into a new AI-based growth model and optimization model, along with carrying out related field trials. With NCXX Farm, agricultural products are grown by integrating several different environmental control tools for agricultural greenhouses (such as ventilation fans, windows, blackout thermal curtains, mist generators, and watering systems) and digitally controlled chemical soil management. AI-based image recognition technology is employed to determine the right time to harvest crops. We are also pursuing research and development into automated harvesting robots for agricultural products.

Conditions in greenhouses are monitored with quantitative indicators. Therefore, our agricultural ICT business allows anyone, even beginners, to start farming without having to rely on the instincts or experience of expert farmers. In this manner, we have helped to create employment for people with disabilities and reduce barriers to entry into agriculture for new entrants. Additionally, our agricultural ICT business minimizes the impact of agriculture on the environment and enables producers to supply reliable, safe and eco-friendly farm products to consumers.

In September 2019, we formed a partnership with WORKS MOBILE Japan Corp. on LINE WORKS, a LINE-based collaboration and communication platform for business users. As a result, we can now use PCs and smartphones to conduct monitoring and surveillance of various types of environmental data, such as temperature, humidity, and sunlight. This information will be easily accessible during break times between jobs and when people are out of the home or office, making it easier for new entrants to start farming. In emergencies such as inclement weather, NCXX Farm will send out alerts via LINE WORKS as soon as it detects any unusual conditions. NCXX Farm instantly grasps and address such unusual situations, including weather-related risks, which are difficult to predict. By doing so, NCXX Farm has successfully reduced the workload of producers in performing various tasks.

NCXX Farm also seeks to reduce the workload of producers in the growing stage. We employ a patented agricultural technique called the "stacked planter farming technique." This is a planter-based growing technique designed to enable producers to provide an optimal environment according to the growth stage of crops, thereby enabling the growth of delicious and healthy crops. The planters contain a proprietary high-performance fertilized soil featuring an optimally balanced mix of nitrogen, phosphoric acid, potassium, and various minerals. Producers can use this soil to maximize the natural growth potential of their crops. No fields are needed because the crops are grown in planters. Crops can be grown simply by putting the fertilized soil into the planters and planting seedlings in the soil. There are no restrictions on where the planters can be placed. (We recommend growing crops in greenhouses in the winter.) No agricultural machinery, such as field cultivators, are required, allowing troublesome weeding and soil tilling work to be reduced. The stacked planter farming technique increases the planting and harvest volume per area, and uses new soil for every planting. For this reason, there is no need to worry about continuous cropping problems.



We have also built a testing plot on idle land in Hanamaki, Iwate Prefecture, where our Head Office is located. In 12 greenhouses on the testing plot, we are conducting a variety of field tests using the stacked planter farming technique. Here, yellow tomatoes with a high sugar content are grown. These yellow tomatoes have gained a strong reputation. Notably, they have been chosen as a local specialty product for Hanamaki's hometown tax donation program (*furusato nozei*).

Another priority is to encourage the deployment of as much agricultural ICT as possible among not only companies involved in the agriculture business, but also those companies that have an interest in, but are not yet involved, in the agriculture business. To this end, we conduct fee-based facility tours every Friday at our testing plot. As part of these study tours, we present an overview of agricultural ICT systems, hand out briefing materials, provide guided facility tours and conduct food tasting and sales sessions.

In this manner, we have created an attractive agricultural business model that realizes work that is less labor intensive and more efficient and that can successfully support locally produced and consumed agricultural products. Going forward, we aim to more actively communicate the attractive features of this business model, while at the same time increasing the number of franchisees.