Mitsubishi Electric Corporation
NTT Communications Corporation
SK Inc. C&C

Mitsubishi Electric, NTT Com and SK C&C Commence Test Project Aimed at Visualizing Supply Chain Carbon Footprints

Leveraging the Catena-X auto industry data ecosystem, will facilitate global inter-company data collaboration

TOKYO, JAPAN, May 19, 2025 — Mitsubishi Electric, NTT Communications and SK C&C announced today that they will commence a groundbreaking test project on June 1st aimed at achieving the automated calculation and visualization of product carbon footprints across entire supply chains. This initiative, utilizing the Catena-X data ecosystem, the first open and collaborative data ecosystem designed specifically for the automotive industry, will leverage cutting-edge technology to facilitate the secure, safe and seamless exchange of information between companies. The goal is to establish a system that accurately captures and quantifies greenhouse gas emissions. The project additionally aims to enhance productivity and improve quality while also promoting decarbonization through reduced energy consumption, ultimately contributing to the realization of a sustainable society.

1. Background

The manufacturing industry produces a wide variety of products to meet a diverse range of customer needs, striving at the same time to enhance productivity and quality. As countries and corporations worldwide increasingly commit to the United Nations' Sustainable Development Goals (SDGs), there is increased focus on environmental conservation. Manufacturing companies are responding by identifying and quantifying their greenhouse gas emissions and by working to reduce their energy consumption and decarbonize their operations.

However, the demand for decarbonization is expanding beyond individual enterprises to encompass entire supply chains. Suppliers are now required to share calculated carbon footprints by product type and delivery destination with partner companies, while ensuring data sovereignty—the right of data providers to determine, at their own discretion, how their data is disclosed and used. This is crucial for advancing the visibility of product carbon footprints across entire supply chains, and to help achieve this, decentralized data integration platforms called "data spaces" have been developed. These provide standardized frameworks that facilitate trust and allow data to be shared securely and directly between companies, organizations, industries, and even countries, minimizing reliance on third parties.

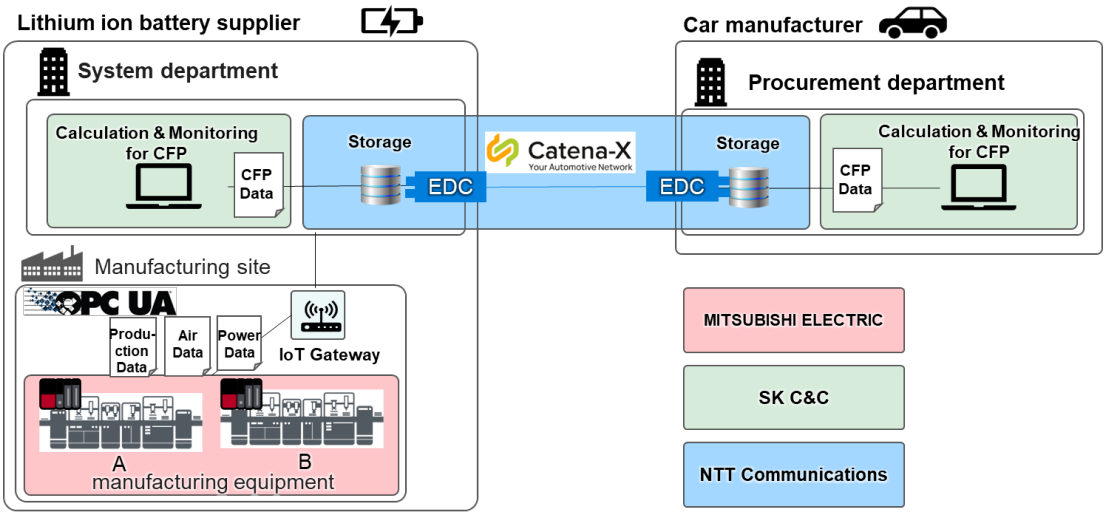
Companies in the European automotive industry, in particular are embracing initiatives that facilitate efficient inter-company data sharing, making use of the Catena-X data ecosystem. In response to these developments, Mitsubishi Electric, NTT Com and SK C&C have joined forces to launch this test project, utilizing the same Catena-X data ecosystem, aiming to establish a system that allows the automatic calculation and visualization of product carbon footprints.

2. Project outline

To visualize the carbon footprint by individual product across an entire supply chain, the necessary data must be collected from manufacturing sites around the world in accordance with internationally recognized standards governing inter-company data collaboration. During this test project, data gathered from manufacturing equipment via programmable logic controllers—specialized industrial computers used to automate the control of machinery and processes—will be used to calculate and visualize product carbon footprints.

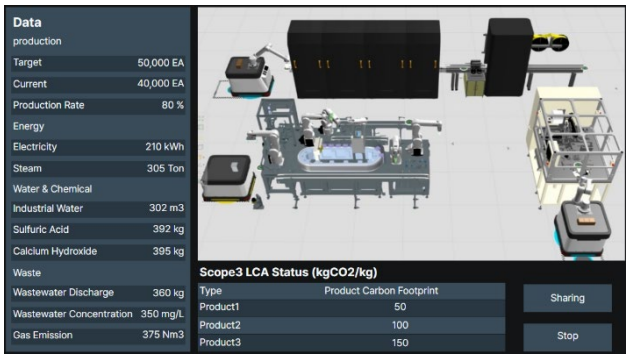
The participating companies will develop and operate an experimental environment featuring system-to-system data communication capabilities aligned with the standards of the Catena-X data ecosystem. This setup will serve as a prototype for the efficient visualization of product carbon footprints across entire supply chains.

Duration	From June 1 to late October 2025 (tentative dates).
Objectives	• To collect from manufacturing equipment information such as power, air, and production data needed for the calculation of carbon footprints, and establish a system for automatic footprint calculation and visualization by product at the equipment level. • To develop a method for securely and seamlessly integrating the carbon footprint calculation results with the Catena-X standard.
Tested process	The manufacturing process of lithium-ion batteries, a key component of electric vehicles.
Verification Flow	1. A system will be set up simulating the test project with an assumed scenario involving a vehicle manufacturer and a lithium-ion battery supplier. 2. At the lithium-ion battery supplier, data from the stacking process equipment will be obtained using programmable logic controllers and loaded into the calculation & monitoring software to calculate the carbon footprint. The stacking process is one of the manufacturing stages for lithium-ion batteries. It involves layering the cathode, separator and anode in sequence to form the basic structure of the battery. 3. The carbon footprint calculations will be fed into the Catena-X in a standard format and automatically stored. 4. The vehicle manufacturer will request the product carbon footprint calculation from the lithium-ion battery supplier. The data will be fed into the calculation & monitoring software to calculate the carbon footprint of the finished vehicle. The data will be exchanged using system-to-system communication functions that are compatible with Catena-X standard protocols and data formats. This will ensure communication is managed in accordance with Catena-X standards, enabling seamless data collaboration while preserving data sovereignty.
Roles	• Mitsubishi Electric will provide a simulated environment at manufacturing sites and drive data collection and related development efforts. • NTT Com will supply system-to-system data communication functions compliant with Catena-X standard communication protocols and data formats, and provide a secure, IT environment for the test project that simulates inter-company data flow. • SK C&C will provide tools that automatically calculate and monitor product carbon footprints at the equipment level using the collected data.



EDC: Eclipse Dataspace Connector - software that controls the communication necessary for interconnection with Catena-X.
OPC UA (unified architecture): a platform-independent communication standard established by the OPC Foundation in the United States.

Test project flow



Carbon footprint calculation & monitoring screen image

3. Future perspectives

Assuming successful completion of this test project, the three companies aim to offer this system across the manufacturing sector, with a particular focus on the automotive industry. The goal will be to promote the widespread adoption of product carbon footprint visualization throughout entire supply chains. By expanding the number of implementing companies, the aim will be to enhance manufacturing processes and reduce energy consumption, thereby helping to spur the creation of a more sustainable global environment.

4. Comments from participating companies

Takahisa Tanaka, Group Senior Vice President of Factory Automation Systems and Senior General Manager of Nagoya Works, Mitsubishi Electric

Our company supplies a wide range of factory automation equipment, along with software products and services that leverage digital technologies, with the aim of realizing a more comfortable and enriched society through advanced automation. Through this pilot project conducted with NTT Com and SK C&C, we have demonstrated that the synergy between our control technologies and their respective secure data communication infrastructure and carbon footprint calculation methods can empower enterprises to accelerate their carbon neutrality efforts. These decarbonization initiatives, driven by state-of-the-art automation, contribute to the realization of a sustainable society.

Takahide Ogawa, Senior Vice President and Head of Fifth Business Solutions Division, NTT Com

As a market leader in social and industrial digital transformation, we are dedicated to connecting people, communities and businesses to create new value and help achieve a prosperous society. We are honored to be able to participate in this test project, which will play a key role in realizing a sustainable industrial society. Achieving decarbonization and other SDGs requires individual elements to be connected and information to be leveraged across global supply chains. Through this test project we aim to implement a reliable global inter-company data collaboration system, eventually extending to the broader manufacturing sector. This initiative will help our global customers utilize our solutions with confidence and facilitate the realization of interconnected, sustainable industrial networks.

Harvey Kim, Head of Manufacturing and Global Business, SK C&C

This test project will offer an opportunity for companies in Japan and Korea to enhance their ESG initiatives by sharing the experience and expertise our three companies have cultivated over time. As a reliable digital ESG partner, we are committed to actively supporting Japanese companies as they explore solutions to decarbonization. We will continue to expand our efforts to help them navigate these challenges and achieve their sustainability goals.

About Mitsubishi Electric Corporation

With more than 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Mitsubishi Electric enriches society with technology in the spirit of its “Changes for the Better.” The company recorded a revenue of 5,521.7 billion yen (U.S.$ 36.8 billion*) in the fiscal year ended March 31, 2025. For more information, please visit www.MitsubishiElectric.com

*U.S. dollar amounts are translated from yen at the rate of ¥150=U.S.$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2025

About NTT Communications
Founded in 1999, NTT Communications provides a comprehensive range of ICT services, leveraging our leading-edge infrastructure and technical expertise. Our solutions span networks, cloud, data centers, applications, security, and AI. In 2022, we became the core provider of enterprise services within the NTT DOCOMO Group. Under the "docomo business" brand, we drive the global-scale transformation of industries by utilizing 5G, IoT, and other advanced technologies. We also support the creation of new workstyles and the digital transformation of local communities. https://www.ntt.com/en/index.html

About SK Inc. C&C
SK Inc. C&C is spearheading the growth and development of the domestic IT service industry across all sectors, including telecommunications, finance, manufacturing, and services. Aiming to become Korea's No. 1 Digital ITS Partner, SK Inc. C&C develops in line with its customers' needs via digital convergence based on its central ITS business. For more information, please visit www.skcc.com.

For more information

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