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ACSL Ltd.

ACSL and SpaceData Verify Integration of Digital Twin-Developed Drone Functions into a Physical SOTEN Drone

Connecting control and image recognition functions developed in a virtual environment to the Japanese-made industrial drone "SOTEN" to advance drone operations and enhance functionality

- Together with SpaceData, ACSL connected control and image recognition functions, developed in a digital twin environment replicating the Sakai Town Drone Lab & Drone Field, to its Japanese-made industrial drone "SOTEN."
- On a physical SOTEN drone, a series of operations from automatic takeoff and target detection through image recognition to hovering after recognition was confirmed, demonstrating that SOTEN can incorporate functions developed in an external virtual environment.
- ACSL will apply the technologies and verification methods obtained through this initiative to a wide range of applications, including defense, disaster prevention, and social infrastructure, and will promote functional enhancements tailored to customer needs.

ACSL Ltd. (Headquarters: Edogawa-ku, Tokyo; Representative Directors and Co-CEOs: Kensuke Hayakawa and Shoji Terayama; "ACSL") announces that it has conducted verification testing in which drone control and image recognition functions, developed and tested in a virtual environment, were connected to its Japanese-made industrial drone "SOTEN." The testing used a digital twin environment replicating the Sakai Town Drone Lab & Drone Field in Sakai Town, Sashima District, Ibaraki Prefecture, and was conducted as part of ACSL's joint initiative with SpaceData Inc. (Headquarters: Minato-ku, Tokyo; President and Representative Director: Katsuaki Sato; "SpaceData") to advance unmanned system operations in the defense, disaster prevention, and social infrastructure sectors.

In this verification, a series of operations was confirmed on a physical SOTEN drone, from automatic takeoff and target detection through image recognition to hovering after recognition. The results demonstrate the extensibility of SOTEN, showing that functions developed in an external virtual environment can be incorporated into the physical drone.

This initiative aims to address the challenges of physical drone testing, such as safety, cost, and the reproducibility of test conditions, and to enable more efficient technology development and more advanced field operations. By combining its proprietary autonomous control technology with the advanced technologies of external partners, ACSL will promote functional enhancements tailored to customer needs and aims to expand the use of drones across a wide range of fields, including defense, disaster prevention, and social infrastructure.

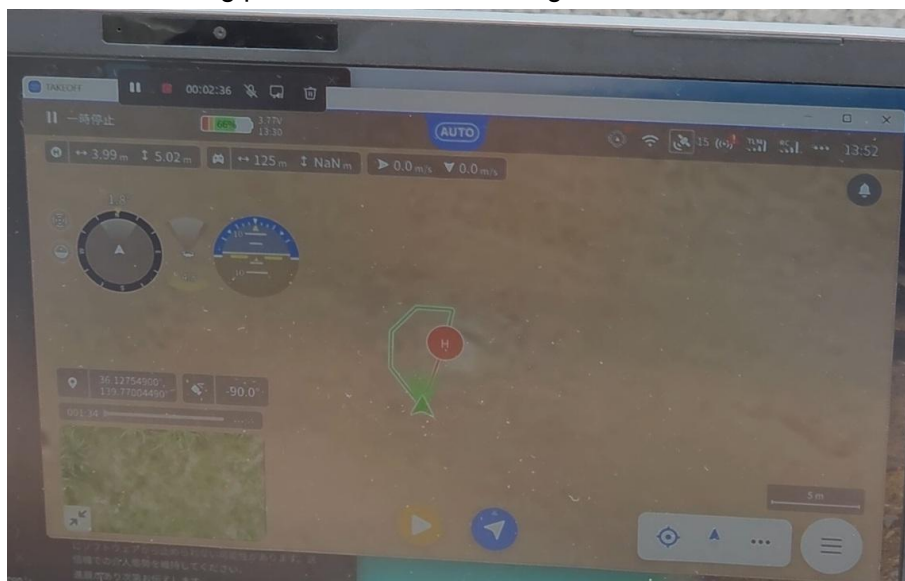
■Building a Digital Twin Environment Replicating a Real-World Facility

SpaceData has built a digital twin environment that reproduces the facilities and surroundings of the Sakai Town Drone Lab & Drone Field in 3D computer graphics. Buildings, the airfield, human models, color markers, and other elements are reproduced in the virtual space and used to verify drone flight paths, image recognition, and other functions.



■Verification of Flight, Image Recognition, and Autonomous Operation in the Digital Twin

SpaceData built a model of SOTEN in NVIDIA Isaac Sim and connected it to the control system used in real-world operations. As a result, flight commands sent from the ground control station (GCS) software are reflected in the virtual drone, and images from its onboard camera are captured, with image processing results returned to the operator's screen. In the virtual environment, SpaceData is also developing a function that searches for a color marker and hovers above it, as well as a function that searches for a person and hovers at a monitoring position while maintaining a set distance.



■Connecting Control Functions Developed in the Virtual Environment to the Physical SOTEN

In tests with the physical drone, command transmission to SOTEN, camera image acquisition, and gimbal control were confirmed. The color marker search function developed in the simulation environment was then connected to the physical drone, and a sequence of operations was confirmed: automatic takeoff, target detection through image recognition using live footage from the drone, and hovering after recognition under automatic control, followed by a manual landing.



■Functional Enhancement by Combining ACSL's Autonomous Control Technology with External Technologies

With its proprietary autonomous control technology at its core, ACSL is enhancing the functionality of its drones by leveraging the advanced technologies of external partners. In this verification, by using SpaceData's digital twin and physical AI technologies, ACSL demonstrated that functions developed in a virtual environment can be incorporated into the physical SOTEN drone. Through such technological collaboration, ACSL will continue to streamline the development of functions tailored to customers' applications and operating environments and to pursue further functional enhancements.

■Expansion into a Wide Range of Applications, Including Defense, Disaster Prevention, and Social Infrastructure

Digital twins make it possible to verify dangerous, costly, or hard-to-reproduce conditions before physical drones are deployed, which is expected to improve the safety, efficiency, and reproducibility of field operations. ACSL aims to apply the technologies and verification methods obtained through this initiative to a wide range of uses, such as surveillance and monitoring in the defense and security sector, searching for people in disaster-affected areas in the disaster prevention sector, and equipment inspection in the social infrastructure sector.

■Future Outlook

The two companies will compare flight data acquired with the physical drone at the Sakai Town Drone Lab & Drone Field with simulation results in the digital twin, and use the findings to improve the fidelity of the drone, camera, and sensor models and of the communication and environmental condition modeling, as well as the accuracy of recognition and control applications.

ACSL is promoting technological collaboration with external partners as part of "Drone evolution with advanced technologies," one of the key strategies under its Medium-Term Management Plan "ACSL Accelerate FY26." ACSL will apply the knowledge gained through this initiative to future product and solution development and will continue to promote functional enhancements tailored to customer needs

and the social implementation of drones.

ACSL Ltd.

ACSL is a manufacturer that develops and mass-produces industrial drones made in Japan under the mission, “Liberate humanity through technology.” Built on proprietary autonomous control technology, ACSL's highly reliable products contribute to the maintenance of social infrastructure and the enhancement of safety and security across a wide range of fields, including aerial photography, inspection, logistics, and disaster response.

For more information, please visit <https://www.acsl.co.jp/en/> .

SpaceData Inc.

Guided by the vision of “a society where anyone can make use of space,” SpaceData Inc. is a technology startup that creates new industries and social infrastructure by combining space and digital technologies. Using digital twin technology that precisely reproduces Earth and space environments, SpaceData aims to build digital platforms that support the future across fields ranging from space to urban development, disaster prevention, and security.

For more information, please visit <https://spacedata.jp/> .

Disclaimer

This document is an unofficial translation of the press release dated October 20, 2026, and is provided for reference purposes only. In the event of any discrepancy between the English and Japanese versions, the Japanese original shall prevail.