

\* This release is a joint release of Autonomous Control Systems Laboratory Ltd., Aeronext Inc. and ACCESS CO., LTD. Please be aware the same release may appear from both sources.

## NEWS RELEASE



March 19, 2021

Autonomous Control Systems Laboratory Ltd.  
Aeronext Inc.  
ACCESS CO., LTD.

### **ACSL and Aeronext reveal the jointly-developed prototype of 4D GRAVITY® delivery drone Furthermore, the two companies will collaborate with ACCESS on logistics applications**

Autonomous Control Systems Laboratory Ltd. (Edogawa Ward, Tokyo; Satoshi Washiya, President and COO; hereinafter referred to as "ACSL", TYO:6232) and Aeronext Inc. (Shibuya Ward, Tokyo; Keisuke Toji, CEO; hereinafter referred to as "Aeronext") are pleased to announce the release of the latest prototype of the 4D GRAVITY®<sup>\*1</sup> logistics drone, which the two companies have jointly been developing. In August 2020, the two companies concluded a joint development agreement for an industrial drone equipped with 4D GRAVITY® and a license agreement for 4D GRAVITY® patents related to the manufacturing and sales of the drones.

Furthermore, ACSL, Aeronext and ACCESS CO., LTD. (Chiyoda Ward, Tokyo; Kiyo Oishi, President and CEO; hereinafter referred to as "ACCESS", TYO:4813) will collaborate on software applications tailored for logistics.



Jointly-developed prototype of 4D GRAVITY® delivery drone

ACSL develops Made-In-Japan industrial drones, targeted for various applications such as logistics, infrastructure inspection, and disasters. ACSL develops its own proprietary flight controller that realizes secure drones, both in safety and reliability. ACSL has one of the top leading experiences in BVLOS flight over unmanned areas (Level 3).

Aeronext has been researching and developing drones for various industrial applications with its proprietary 4D GRAVITY® airframe structural design technology at its core, and is now focusing on the logistics field in particular, working on the research and development of specialized airframes.

ACCESS has advanced technology and extensive market experience in the IoT software and hardware domains, and starting in 2019, we are expanding the social issues to be solved by IoT to the aerial domain and developing solutions using drones.

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In the future, the three companies will bring together their knowledge and technologies to jointly develop this latest prototype and conduct a series of demonstrations and verifications toward full-scale mass production, and jointly promote the goal of early social implementation.

<Features of the presented drone>

## 1. Hardware :

Conventional drones used in logistics applications are mostly in the form of general-purpose aircraft used for aerial photography, etc., with the payload replaced by cargo. They are not optimized for logistics applications, and have limitations in flight speed, flight distance, deliverable weight, and delivery quality. On the other hand, a dedicated logistics aircraft equipped with 4D GRAVITY® will have the following three features to achieve higher levels of flight speed, flight distance, deliverable weight, and delivery quality.

- 1) Optimal placement of luggage near the ideal center of gravity of the drone
- 2) Dedicated logistics drone specialized for steady horizontal flight and forward movement
- 3) Independently displaceable luggage leveling mechanism



Luggage section of the latest

## 2. Software : About software for logistics drones

We develop software for logistics drones. It has the following features.

- 1) Level 4 compliance for logistics drones
- 2) Optimal delivery route planning based on weather and other delivery route conditions
- 3) Linkage with logistics management system

<Specifications of the announced drone>

Maximum landing weight 25kg

Standard payload 5kg

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### ■Reference

\*1

Structural design technology that optimizes the center of gravity of the aircraft to make the motor speed uniform regardless of the attitude, state, and movement during flight, and improves the

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basic performance of the industrial drone in areas such as stability, efficiency, and mobility. This technology is characterized by a coupling structure between the airframe and payload. Aeronext patents this technology and manages its 4D GRAVITY® patent portfolio. By improving the basic performance industrial drones, 4D GRAVITY®, expands the applications of industrial drones allowing for expanded markets.

\*2

This refers to the phase of realizing "unaided, unmanned flights in manned areas" by fiscal 2022, as specified in the "Roadmap 2020 for the Industrial Revolution in the Sky" by the Public-Private Sector Council for the Improvement of the Environment Related to Small Unmanned Aircraft, which was announced in July 2020.

【Autonomous Control Systems Laboratory Ltd.】

ACSL develops, manufacture, and commercialize industrial drones in order to realize labor-saving and unmanned operations in the industrial field. The core technology is in its proprietary autonomous control technology and industrial drones equipped with image processing and AI edge computing technology. Drones are already used in various fields such as infrastructure inspection, postal and logistics, and disaster prevention.

\* Company Profile : <https://www.acsl.co.jp/en/company>

【Aeronext Inc.】

Aeronext, an IP driven R & D technology startup for next-generation drones, is a company that designs the sky through technology in order to create a world where the sky becomes a social infrastructure, is economized, and solves social issues through drones. The core technology is 4D GRAVITY®, a unique structural design technology that improves basic drone performance such as stability, efficiency, and mobility of industrial drones by optimizing the center of gravity of the aircraft. In order implement this 4D GRAVITY® as standard equipment on industrial drones, we have constructed a strong patent portfolio and are promoting a partnership based platform business for the 4D GRAVITY® license globally.

\* Company Profile : <https://aeronext.co.jp/company/>

【ACCESS CO., LTD.】

Since its establishment in 1984, ACCESS (TYO: 4813) has been an independent software company providing advanced IT solutions based on mobile and network software technologies to the communications, broadcasting, consumer electronics, automotive, publishing and energy infrastructure industries worldwide. Leveraging its development capabilities and know-how in mobile software, which has been installed in more than 1.5 billion units, and network software, which has been adopted by more than 350 companies, the company is currently focusing on the development and commercialization of IoT solutions that integrate embedded and cloud technologies. With subsidiaries in Asia, the United States, and Europe, we are also promoting international expansion.

\* Company Profile : <https://www.access-company.com/>

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