November 6, 2026

NTT, Inc.

Toward the Realization of an Optical Communication Infrastructure That Seamlessly Connects Space and Earth

NTT and Safran DS Collaborate on Next-Generation Multi-Orbit Optical Ground Communications



TOKYO, Japan — November 6, 2026 — NTT, Inc. (hereinafter "NTT") and Safran Data Systems (hereinafter "Safran DS"), a leading space equipment provider with recognized expertise in space communications and ground segment solutions, signed a Memorandum of Understanding (MoU) on November 4, 2026, to explore the possibility of a strategic collaboration aimed at realizing a next-generation optical communication infrastructure that connects various satellites, ranging from low Earth orbit to geostationary Earth orbit, with the ground. Based on this MoU, the two companies will explore the integration of NTT's digital coherent technology[*1] and network control technology[*2] into Safran DS's optical ground stations for optical connections between satellite networks and ground-based data infrastructure, as well as their connection to the ground-based APN[*3]. Furthermore, they will examine the applicability of these optical ground stations to multi-orbit satellite networks.

This collaboration with Safran DS applies the IOWN technology promoted by NTT to the space sector and is one of the initiatives aimed at realizing the IOWN concept[*4].

Background and Objectives

In recent years, driven by the expansion of satellite constellations, the growing utilization of Earth observation data, progress in the space data center concept, and the increasing sophistication of space exploration missions, there is growing expectation for the use of optical communication technology—capable of high-capacity, low-latency data transmission that surpasses conventional RF (radio frequency) communication—as a communication infrastructure connecting space and the ground. Furthermore, as the practical application of satellite constellations comprising multiple orbits—such as LEO, MEO, and GEO—and data relay services progresses, expectations are rising for space-to-ground optical connections capable of supporting multiple orbits.

Under the IOWN concept, NTT is working to realize a next-generation communications infrastructure that leverages digital coherent technology, APN, and advanced network control technologies. Meanwhile, Safran DS has a proven track record in space communications systems—including satellite ground stations, tracking antennas, and TT&C and high data rate reception modems—and has developed a complete portfolio of optical ground stations for LEO, MEO and GEO applications called “IRIS OGS.”

The two companies have now begun collaborating to leverage their respective technologies and expertise to realize a next-generation optical communications infrastructure that connects multi-orbit satellite networks with ground-based data infrastructure via optical links.

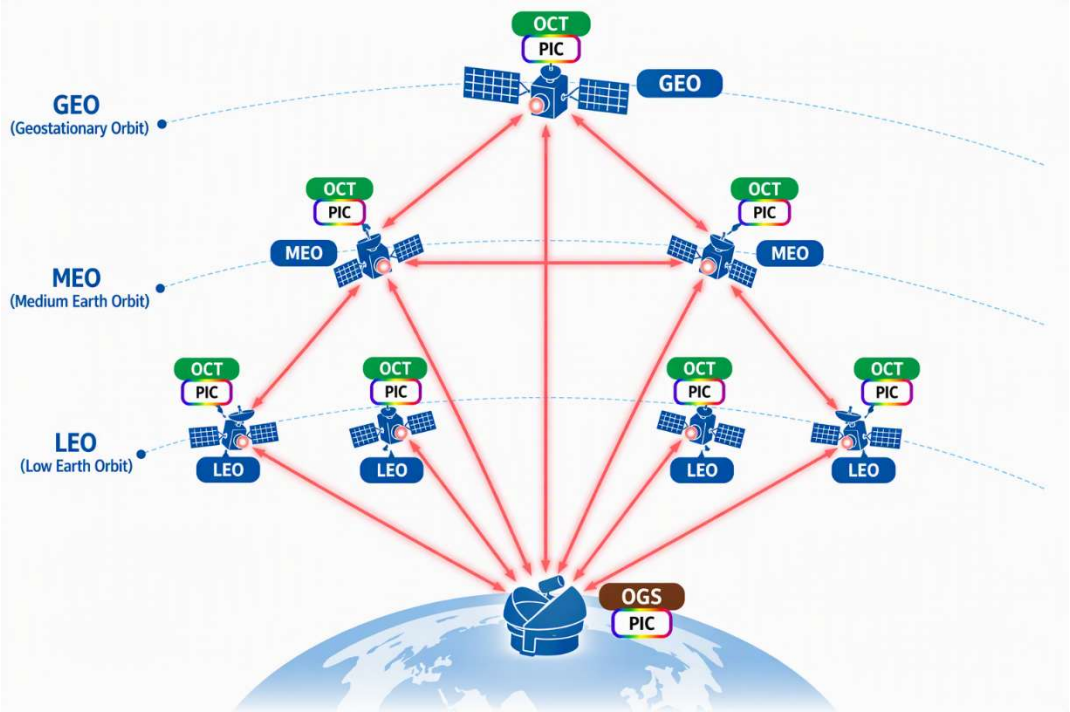
Scope of the Collaboration

Under this collaboration, NTT and Safran DS will explore the integration of NTT’s digital coherent technology and network control technology into Safran DS’s optical ground stations to assess the potential for their use across multiple orbits. The two companies will begin by establishing communication capabilities between low Earth orbit satellites and optical ground stations and will proceed in stages with the technological development of a next-generation optical communication infrastructure that integrates multi-orbit satellite networks with terrestrial networks. Furthermore, by connecting selected optical ground stations to nearby data centers via APN, they will work to establish a future space data distribution infrastructure that seamlessly connects satellites, optical ground stations, and terrestrial data networks via optical communication.

Future Developments

NTT is working to realize a space data distribution infrastructure that integrates multi-orbit

satellite networks with IOWN, and under its space business brand “NTT C89[*5]”, will promote the creation of new services that integrate space and Earth, as well as the expansion of business opportunities.



[Glossary, etc.]

[*1] Digital Coherent Technology

A cutting-edge communication technology that utilizes not only the “brightness (flashing)” of light but also the “timing of peaks and troughs” and the “direction of oscillation”—information carried by light waves.

[*2] Network Control Technology

A technology that automatically routes around optical ground stations rendered inoperable by weather conditions and coordinates multiple ground stations with the APN to achieve highly reliable communication.

[※3] APN

The All-Photonics Network (APN) is one of the key technological pillars of IOWN. It aims to achieve exceptionally low power consumption, high-speed, high-capacity, and low-latency transmission through a wavelength network that introduces photonics (optical)-based technology across the entire spectrum—from terminals to the network—and provides end-to-end optical wavelength paths.

[※4] IOWN Concept (Innovative Optical and Wireless Network)

This is a vision for a communication infrastructure—including end devices—that utilizes

innovative, light-centric technologies to create a prosperous society that embraces diversity by optimizing the relationship between the individual and the whole based on all available information. It aims to provide high-speed, high-capacity communications and vast computational resources that transcend the limitations of existing infrastructure.

[*5] “NTT C89” is a trademark of NTT Corporation.

It is an abbreviation for “NTT CONSTELLATION 89 PROJECT,” an initiative aimed at contributing to the expansion of space-related businesses and the development of the space industry as a whole by providing solutions to society.

This press release is part of the initiatives under “NTT C89,” the brand for space-related businesses operated by NTT Group companies and others.

URL: https://group.ntt/jp/aerospace



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