

Proof of Concept Conducted on a Digital Twin Using Local 5G at Tokyo Midtown Yaesu, a Large-Scale, Mixed-Use Facility

– Aiming to create new experiential value for the district –

Key Points of this Press Release

- Digital twin Proof of Concept started for a large-scale, mixed-use facility using local 5G at Tokyo Midtown Yaesu, with facility space being reproduced in 3D on the cloud
- By utilizing a digital twin, delivery robots are centrally controlled and managed on the cloud, making it possible for them to operate autonomously within the facility. In addition, visitors can smoothly navigate to their destination using augmented reality (AR) through an app, and effective promotions can be provided by the facility.
- In the future, the goal is to expand the digital twin to the district as a whole and create new experiential value through use of the latest DX.

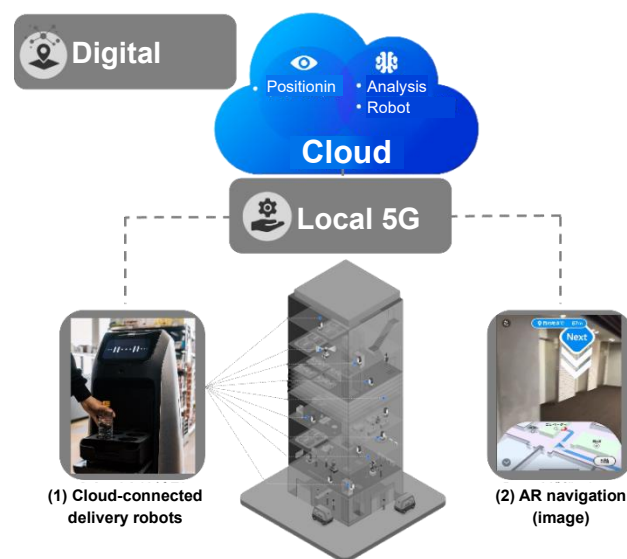
Tokyo, Japan, January 17, 2025 - Mitsui Fudosan Co., Ltd., a leading global real estate company headquartered in Tokyo, and NIPPON TELEGRAPH AND TELEPHONE EAST CORPORATION (NTT East) announced today that they started a Proof of Concept (“PoC”) in January 2025 on a digital twin for a large-scale, mixed-use facility utilizing local 5G on the fourth and fifth floors of Tokyo Midtown Yaesu with a view to realizing a smart building and providing services for new urban development at Tokyo Midtown Yaesu, a project being developed by Mitsui Fudosan as a member of the Yaseu 2-Chome North Zone Redevelopment Project Association.

The digital twin^{*1} is expected to be utilized in various fields. At Tokyo Midtown Yaesu, we are actively promoting the use of robots to address the shortage of personnel required for delivery and transportation in large-scale facility operations. The PoC is an initiative unparalleled in Japan. A digital twin that combines 3D point cloud data and image data has been built on the cloud, and it will be utilized to run multiple services including delivery robots within the facility as well as AR navigation and promotions in order to further advance facility operations utilizing DX.

In the future, the companies will work to create new experiential value through utilization of the latest DX, with an eye to expanding the digital twin to the entire district and utilizing it for people flow analysis and disaster response.



Tokyo Midtown Yaesu



Conceptual image of providing services using local 5G at Tokyo Midtown Yaesu

^{*1} Digital twin

Technology that reproduces and constructs a virtual world (digital) that is very similar, like a twin, to the actual world based on data collected in real time.

■Role of each company

Mitsui Fudosan (Tokyo Midtown Yaesu)	Overall management of the PoC, providing a demonstration environment, facility operations
NTT East	Construction of local 5G environment, digital twin environment, and robot delivery system; development and construction of AR applications; technology PoC

■Overview of the PoC

In a local 5G environment that enables high-speed, large-capacity transmission, enormous amounts of image data are quickly processed to build a digital twin on the cloud in a short period of time that combines high-precision 3D point cloud data and image data. The digital twin is easily updatable with a smartphone, and enables positioning using a virtual positioning system (VPS). Thanks to this feature, even indoors, where GPS signals have trouble penetrating, highly precise positioning is possible, and the system can be expected to be used for various applications.

In the PoC, the companies will work on the construction methods of the digital twin to be utilized for multiple services as well as organize and solve issues. in the case of upgrades and expansion.

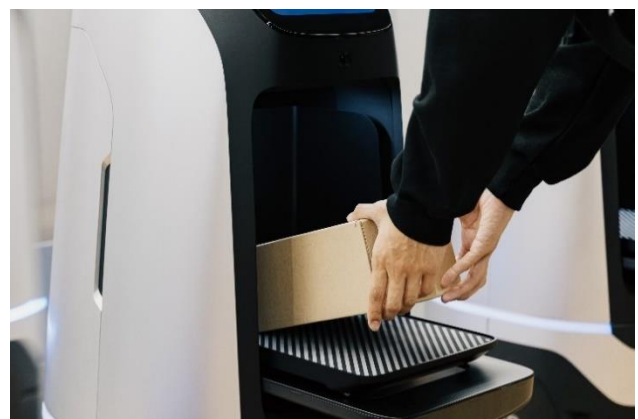


Spatial image of the fifth floor of Tokyo Midtown Yaesu reproduced using the PoC's digital twin

(1) Deployment of cloud-connected delivery robots

With a view to the practical utilization of cloud robotics, in which robots use a digital twin, to operate autonomously, cloud-connected delivery robots (“delivery robots”) will be deployed that don’t have their own brain like regular robots but rather are controlled on the cloud. Delivery robots use the cloud-based digital twin as a map and can locate their position accurately through VPS, and when the digital twin is updated, it can be instantly reflected in the routes of all the delivery robots. In addition, the robots can locate one another’s position so their movements can be controlled based on this. Over 100 delivery robots can be centrally controlled and managed in the building. The robots must cover large distances while transmitting high-definition images to and from the cloud in real time, so a high-quality, wireless access local 5G environment is extremely effective, allowing for seamless movement.

By linking delivery robots that have these characteristics with the building security and elevator control systems, robots will be able to smoothly delivery from restaurants within the facility to office workers, which will increase the convenience and comfort of workers.



Delivery robot image

(2) Expanding services that apply the digital twin

The companies plan to utilize the cloud-based digital twin and demonstrate smooth navigation to help visitors get where they need to go in the facility. In addition, AR will be used to introduce products from facility stores and conduct promotions with coupons to create a new facility experience for visitors. Further, for the devices that will display AR, the companies are using not just smartphones and tablet devices but also MiRZA XR glasses*² made by NTT QONQ Devices, Inc., as considerations and demonstration will be conducted by linking XR (cross-reality) and the digital twin.

*² MiRZA made by NTT QONQ Devices are lightweight, high-performance XR glasses that can be operated wirelessly from a smartphone. Details are provided at the following website. <https://www.devices.nttqonq.com/mirza/xrd-t01> (in Japanese)

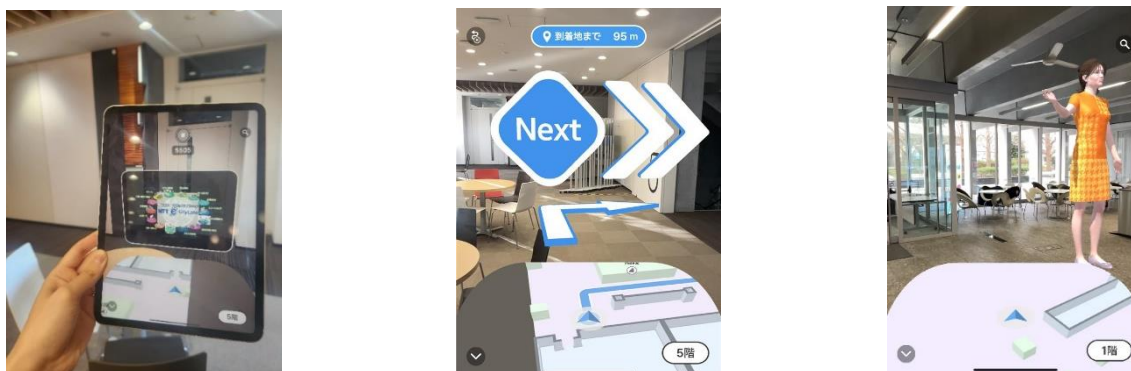


Image of use of AR navigation

■Future prospects

A digital twin built on the cloud combines 3D point cloud data and images. Its major strength is that it makes positioning possible using inexpensive, general-purpose cameras. In addition, it is easy to expand the system not only within the building but also outside, which means it is possible to build a seamless digital twin of the entire district. Drawing on these characteristics, the companies are exploring further applications of the digital twin, such as building management, which faces personnel shortages. Furthermore, they aim to contribute to new urban development by expanding the digital twin to the entire city, with a focus on applications such as people flow analysis and disaster measures through highly precise simulations.

■Sustainability in the Mitsui Fudosan Group

Based on the meaning of its “& mark,” “to generate new value with society through cooperation, coexistence and co-creation, we forge ahead, innovating,” the Mitsui Fudosan Group views the “creation of social value” and the “creation of economic value” as two wheels of a cart. Accordingly, we believe that the creation of social value leads to the creation of economic value, and that this economic value then creates even greater social value.

Moreover, we identified six Group Materiality priority issues when formulating our new management philosophy in April 2024. These Group Materiality priority issues are (1) Contribute to industrial competitiveness, (2) Coexist with the environment, (3) Health and Vitality, (4) Safety and security, (5) Diversity and inclusion, and (6) Compliance and governance. The Mitsui Fudosan Group will work to address each of the materialities through its core business activities and contribute to the promotion of sustainability.

(References)

- Group Management Philosophy and Long-Term Vision
<https://www.mitsuifudosan.co.jp/english/corporate/innovation2030/>
- Group Materiality
https://www.mitsuifudosan.co.jp/english/esg_csr/approach/materiality/

* The initiatives outlined in this release are designed to help address the following two Sustainable Development Goals (SDGs).

