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Nautilus Technologies, Inc.
Nomura Research Institute, Ltd.
Internet Initiative Japan Inc.
1FINITY Inc.
Fujitsu Limited
GHELIA INC.
M-TEC Co., Ltd.

Next-generation spectator experience at KYOJO CUP: AI selects and delivers "The moment you want to see" with ultra-low latency

Local 5G and Physical AI enable real-time video delivery, eliminating the need for dedicated studios for a new spectator experience

Tokyo, Kawasaki, and Saitama, Japan, July 27, 2026 – Nautilus Technologies Inc., Nomura Research Institute, Ltd., Internet Initiative Japan Inc., 1Finity Inc., a Fujitsu company and leading provider of global network solutions, Fujitsu Limited, Ghelia Inc., and M-TEC Co., Ltd. today jointly announced the commencement of a demonstration experiment with Mitsubishi Electric Corporation. This project will validate next-generation real-time video streaming system, leveraging Local 5G and Physical AI, using the "KYOJO CUP" formula car race as its setting. This initiative is part of the "Survey on the Effectiveness Verification of Low-Latency Distributed Processing Technology in Next-Generation Infrastructure" project, led by the New Energy and Industrial Technology Development Organization (NEDO).

Local 5G real-time streaming and Physical AI control in a live race environment

This demonstration will verify a system (hereinafter, "this system") that acquires 4K video and telemetry data in real-time from in-car cameras and telemetry units on racing cars via Local 5G. AI then instantly performs appropriate editing, selection, and information overlay to deliver "the most exciting footage" to spectators in real-time.

This system utilizes Physical AI, integrating in-car video and telemetry data, based on detailed physical 3D models derived from actual data at Fuji Speedway. The AI instantly determines "the most exciting situations" and delivers "the moment they want to see" to spectators at the circuit, on the spot. This mechanism offers a completely new, immersive user experience filled with a sense of live presence. Furthermore, as all processes are managed by open systems and AI, the need for dedicated studios, systems, and specialized personnel—traditionally required for in-venue broadcasting—is eliminated. This aims to foster a low-cost, versatile video distribution solution deployable at diverse event venues.

Moreover, this demonstration is being conducted in line with the government's "Watt-Bit Concept." It will establish a Local 5G-enabled Physical AI-controlled real-time streaming system within a live operational environment for the "KYOJO CUP" final race. This is achieved by linking CPU servers installed at Fuji Speedway with remote GPU servers located at power company substations and sales offices.

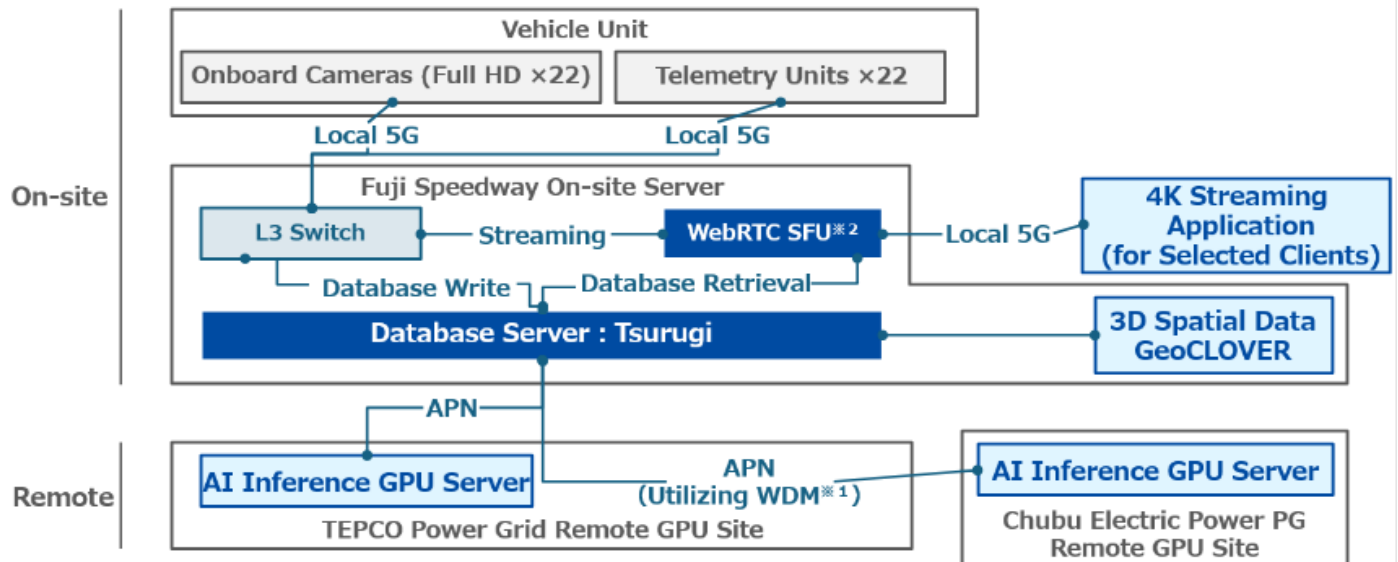
System configuration

The System's configuration is as follows:

Telemetry data and 4K video from telemetry units and in-car cameras installed on 22 participating formula cars will be transferred to CPU servers within Fuji Speedway via the deployed Local 5G network. This data is then stored in

"Tsurugi," an ultra-high-speed relational database (RDB). Concurrently, Tsurugi will link with "GeoCLOVER"—a spatiotemporal data platform that holds Fuji Speedway's 3D circuit data—and call remote GPUs connected via an optical network. From the stored telemetry data, 4K video, and in-venue 3D data, Physical AI will instantly determine "which footage is most exciting." Based on this AI judgment, Tsurugi will issue appropriate instructions to client applications, delivering "the most exciting footage" to users in real-time.

Overall System Architecture



※ 1 WDM (Wavelength Division Multiplexing) : A technology that multiplexes optical signals of different wavelengths onto a single optical fiber for transmission.

※ 2 WebRTC SFU (Web Real-Time Communication Selective Forwarding Unit) : A server that receives WebRTC audio/video streams and selectively forwards the appropriate streams to individual viewers.

Figure: System configuration

Each company's role in the System is as follows:

- Nautilus Technologies: Overall project management, provision of middleware (Tsurugi), and system architecture oversight.
- Nomura Research Institute: Evaluation of industrial potential of advanced technologies, and formulation of strategies for social implementation.
- Internet Initiative Japan (IIJ): Local 5G construction, provision of CPU/GPU server environments, and overall infrastructure management within Fuji Speedway.
- 1Finity / Fujitsu: Provision, construction, and technical support for APN equipment and optical network interface cards (optical NIC).
- Ghelia: AI development and streaming application development.
- TEPCO Power Grid: Provision of optical network and Watt-Bit collaboration platform infrastructure.
- CHUBU Electric Power Grid: Provision of optical network and Watt-Bit collaboration platform infrastructure.
- Mitsubishi Electric: Provision of 3D model creation (GeoCLOVER).
- M-TEC: Provision of telemetry units and in-car cameras.

Cooperation: KYOJO CUP Organizing Committee, Fuji Speedway Corporation, FSAS Technologies Inc. (provision of GPU servers "PRIMERGY RX2540 M8").

About each core technology

- About Local 5G:
Wireless communication for high-speed mobile objects requires precise synchronization with base station signals, seamless handover between base stations, and stable bandwidth allocation. The IIJ Group has been actively conducting Local 5G verification for formula car races, and it is expected that the data communication network built for this project will prove sufficiently practical and useful.
Furthermore, the application of Local 5G technology is seeing increasing demand in the OT (Operational Technology) sector of manufacturing sites and as a supplementary communication means for temporary event venues. We aim to expand its deployment across various fields as a solution for building data

communication networks independent of conventional mobile phone networks.

- **About APN (All-Photonics Network) and optical NIC:**
APN enables low-latency transmission of large volumes of data by processing optical signals from sender to receiver without conversion. This demonstration utilizes APN to achieve real-time AI processing and realize the Watt-Bit Concept, a strategic framework that links electricity grids ("watts") and telecommunications ("bits") to optimize energy use and computing power. Additionally, 1Finity will introduce optical NICs, currently under development and scheduled for release in October 2026. By using optical NICs, servers located over 100 km apart can be directly connected via optical signals without the need for conventional L2/L3 switches or routers. This achieves further low latency and suppressing performance degradation during long-distance communication through a unique mechanism.
- **About Tsurugi:**
At the core of the System is "Tsurugi," a Japanese-made ultra-high-speed RDB. Nautilus Technologies is responsible for the support and architectural design of this system.
Tsurugi is a Japanese-made open-source next-generation RDB developed with NEDO's support, offering world-class performance while ensuring end-to-end support and manufacturing within Japan. It is also a pioneer in AI integration, including support for MCPs, and features a mechanism to seamlessly utilize remote GPUs from the RDB as user-defined functions (UDFs). This makes it highly compatible with low-latency AI, which is one of its key characteristics.
- **About AI:**
Ghelia is responsible for the implementation and provision of AI. The ultra-low latency AI scoring deployed in this demonstration is characterized by its ability to synchronize in-car telemetry and video data and instantly calculate the scene's excitement level in real-time. By integrating external knowledge grounding with video linkage, and performing a comprehensive ranking of scenes that resonate with spectators' emotions, this system is positioned as a Physical AI that connects recognition results to decision-making in the physical space. Moving forward, its application will expand to support actions in the physical world, such as race team strategy planning and driver assistance.
- **About GeoCLOVER:**
GeoCLOVER is a spatiotemporal data platform developed by Mitsubishi Electric that virtually reproduces the entire real world as spatial and temporal data. In this demonstration experiment, it provides 3D spatial data of Fuji Speedway. Based on this data, Physical AI combines in-car video, telemetry, and GPUs to determine race situations in real-time. In the future, it aims to expand its business to a wide range of areas, including factories, infrastructure, and buildings, in collaboration with RDB Tsurugi.
- **About KYOJO CUP:**
The KYOJO CUP, launched in 2017, is Japan's first and the world's first professional race series exclusively for women. Fierce battles primarily unfold at Fuji Speedway. All participants use identical specification formula cars, ensuring completely equal conditions where victory is determined solely by driving skill and race strategy. In recent years, with increasing international participation, it has become a race attracting significant attention not only from Japan but also globally.

Positioning of This Study

Tatsunori Endo, Project Manager and Team Leader of the Generative AI Team, AI and Robotics Department, New Energy and Industrial Technology Development Organization (NEDO) comments:

"Since fiscal year 2018, NEDO has been implementing the AI Chips and Next-Generation Computing Technologies Development Project for High-Efficiency and High-Speed Processing (the "Project"), with the aim of creating next-generation information processing technologies that go beyond extensions of existing technologies.

From the outset of the Project, NEDO recognized the increasing power consumption of data centers as a future societal challenge. However, with the emergence and rapid adoption of generative AI, this challenge has grown far beyond our initial expectations. As one of the potential solutions to this issue, NEDO has been advancing the development of low-latency distributed processing technologies through the Project. The relational database (RDB) Tsurugi, which will be utilized in the verification activities of this study, is one of the outcomes of these efforts.

Through this study, NEDO will evaluate the effectiveness of low-latency distributed processing technologies, a key next-generation information processing technology, with the goals of addressing societal challenges arising from the accelerating adoption of AI and strengthening Japan's industrial competitiveness through the deployment of innovative technologies.

The planned field trials involve collaboration across multiple industries and sectors. We expect these efforts not only to validate the effectiveness of the technology, but also to contribute to the creation of new next-generation services and business opportunities."

About IIJ

Founded in 1992, IIJ is one of Japan's leading Internet-access and comprehensive network solutions providers. IIJ and its group companies provide total network solutions that mainly cater to high-end corporate customers. IIJ's services include high-quality Internet connectivity services, systems integration, cloud computing services, security services and mobile services. Moreover, IIJ has built one of the largest Internet backbone networks in Japan that is connected to the United States, the United Kingdom and Asia. IIJ was listed on the Prime Market of the Tokyo Stock Exchange in 2022. For more information about IIJ, visit the IIJ Web site at <https://www.ij.ad.jp/en/>.

About 1Finity

1Finity, a Fujitsu company, is a global provider of communications networks for our connected world. We uniquely combine technological leadership and expertise in open optical and wireless networking, network automation, and applied AI/ML to design, build, operate, and maintain critical digital communications network infrastructure. Collaborating closely with ecosystem partners, we deliver transformative outcomes for service providers and network operators, and enable them to lower TCO, improve network performance, and increase energy efficiency. For more information, visit www.1Finity.com

About Fujitsu

Fujitsu's purpose is to make the world more sustainable by building trust in society through innovation. As the digital transformation partner of choice for customers around the globe, our 100,000 employees work to resolve some of the greatest challenges facing humanity. Our range of services and solutions draw on five key technologies: AI, Computing, Networks, Data & Security, and Converging Technologies, which we bring together to deliver sustainability transformation. Fujitsu Limited (TSE:6702) reported consolidated revenues of 3.5 trillion yen (US\$23 billion) for the fiscal year ended March 31, 2026 and remains the top digital services company in Japan by market share. Find out more: <https://global.fujitsu/en-global>

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