# IOWN INTEGRAL

NTT R&D FORUM 2024

RESEARCH
γ10-08

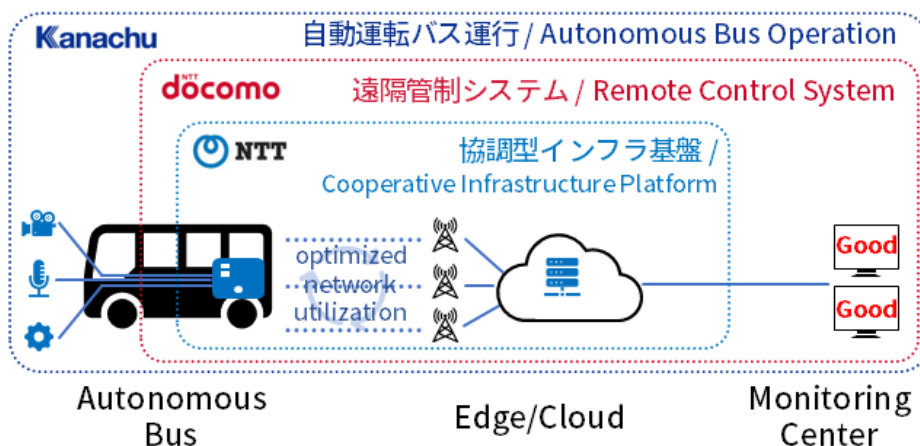## Cooperative infrastructure platform for reliable communications for autonomous driving

Transportation service providers can operate safe driverless transportation services with continuous video monitoring

#Productivity Improvement #Regional Revitalization #Customer Experience Value Creation

Before — 急激な通信品質低下により映像の途切れが発生
Video interruption due to sudden decrease in communication quality

Autonomous Bus — Edge/Cloud — Monitoring Center
Stop / Bad
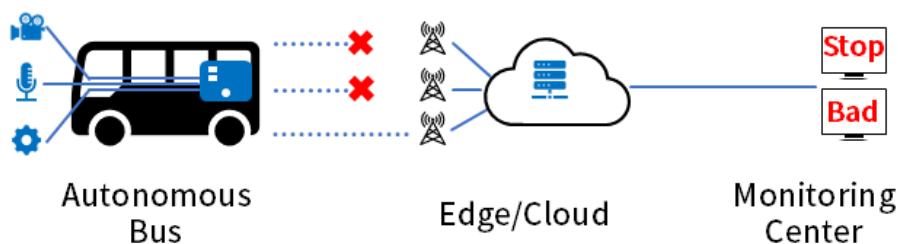
After — 通信品質の予測と回線最適利用により映像の途切れを低減
Significantly reduce video interruptions by predicting and optimizing communication quality

Kanachu 自動運転バス運行 / Autonomous Bus Operation
docomo 遠隔管制システム / Remote Control System
NTT 協調型インフラ基盤 / Cooperative Infrastructure Platform
optimized network utilization
Autonomous Bus — Edge/Cloud — Monitoring Center
Good / Good

///Technical Issue

Safe driverless operation requires uninterrupted remote monitoring. However, fluctuations in communication quality during movement make stable video transmission challenging.

///Research Goal

By achieving safe driverless service through uninterrupted video transmission, we contribute to addressing issues such as the shortage of drivers.

---Technology

- Optimizing multiple connections through control based on communication quality predictions.
- Pioneering early implementation of Multipath QUIC technology in real-world environments.
- Integrated with functionalities developed by NTT docomo.

---Novelty

Conventional technologies adjust transmission volume and bitrate after quality degrades. In contrast, the proposed technology anticipates degradation using historical performance and real-time data, preventing video interruptions that traditional methods can't address.

---Applicable Business

Business area : Transportation service business.
Use cases : A cooperative infrastructure platform enables a continuous network that allows for real-time monitoring of both the interior and exterior video of several autonomous vehicles. This enhances passenger safety and provides efficient, high-quality service.
Availability : The core technology availability is anticipated for 2025.

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