Autonomous Driving Monitoring Application

AITRAS System Architecture

AITRAS

SoftBank-Developed Core Technologies

Orchestrator

Management and control software

Edge AI

NVIDIA AI Enterprise

RAN L2/L3 Software

RAN L1 Software

NVIDIA AI Aerial

Enhancing the software for wireless signal processing

Virtualization Platform **MIG/MPS**

Building and implementing virtualization foundations

NVIDIA GH200
Arm Neoverse V2

Providing Edge AI Service Menu

Radio Unit

| LLM Robot | Multimodal LLM | High-performance RAG | NVIDIA Serverless API* |

*Serverless API powered by NVIDIA AI Enterprise

Positioning of this Demo

AITRAS

Edge AI

オーケストレーター

| Edge AI | RAN L1/L |
| NVIDIA AI Enterprise | |

RAN-1

NVIDIA

仮想化基盤

NVIDIA GH2
Arm Neoverse V2

Radio Unit

ソフトバンク

AI App
（SoftBank）

AI App
（3rd Party）

AI Models | **OSS LLM** | **Partner LLM** | ○○○

NVIDIA AI Enterprise
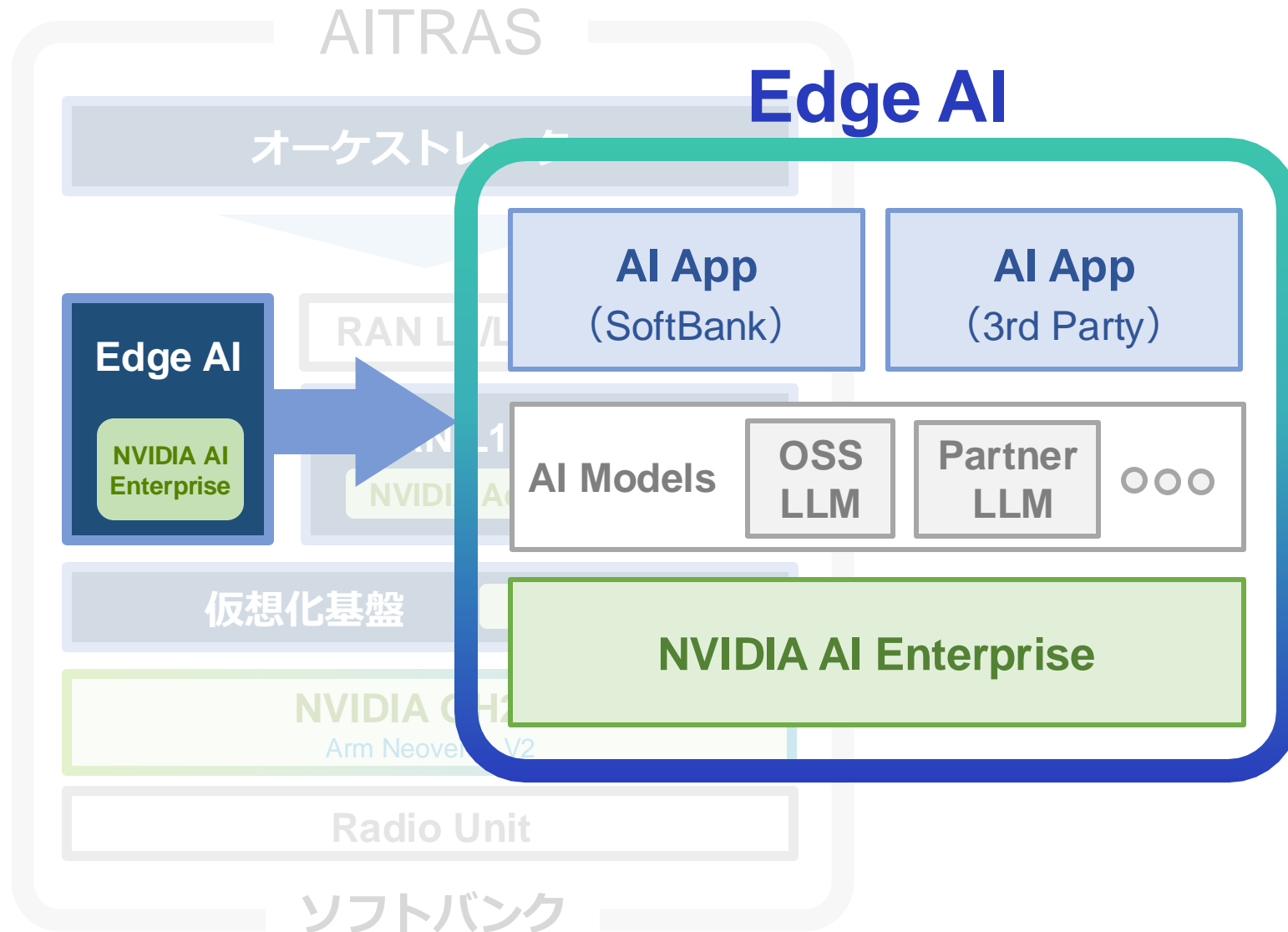
Original AI Service
- **Autonomous Driving Monitoring App**
- Cloud Robot
- RAG Menu @edge

NVIDIA Serverless API

Allocates unused resources to meet customer demands on demand

NVIDIA AI Enterprise

Industry-standard AI framework

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Challenges and Solutions for the
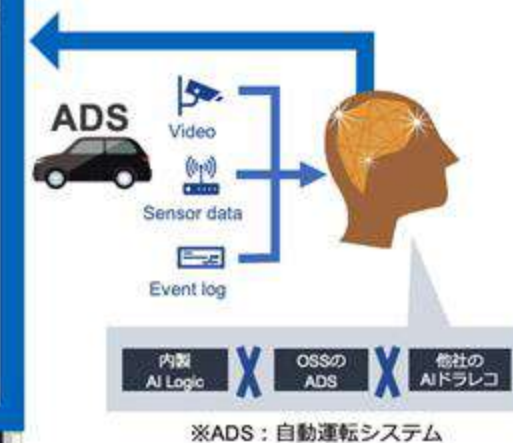# Social Implementation of Autonomous Driving

Mounting Challenges, Especially:

Cost

Safety

Remote monitoring, previously requiring human observation, recognition, and decision-making, is automated with AI.

People Do Not Normally Look at This Screen

Further Challenges in Autonomous Driving

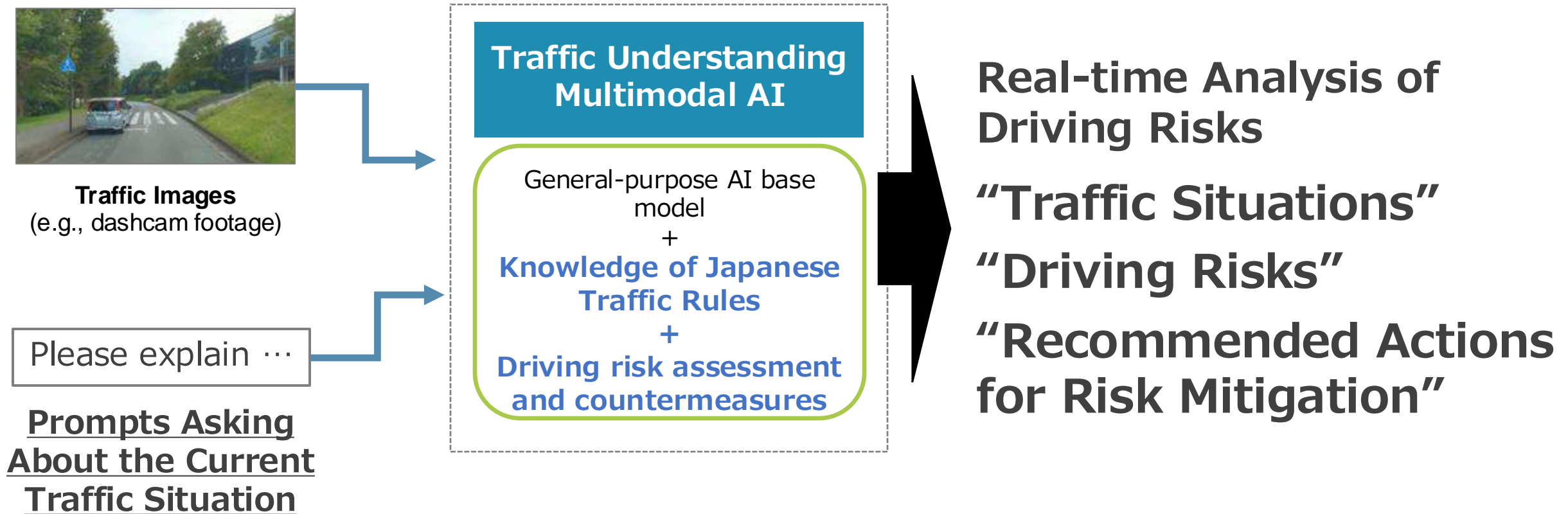## Unable to Handle Complex and Unpredictable Driving Scenarios

Real-time Understanding of Driving Situations Providing Remote Support

Risk of Severe Accidents and Collisions

Development of Multimodal AI for Traffic Understanding

Features of Multimodal AI for Traffic Understanding

Traffic Images
(e.g., dashcam footage)

Please explain …

Prompts Asking About the Current Traffic Situation

Traffic Understanding Multimodal AI

General-purpose AI base model
+
Knowledge of Japanese Traffic Rules
+
Driving risk assessment and countermeasures

Real-time Analysis of Driving Risks

"Traffic Situations"

"Driving Risks"

"Recommended Actions for Risk Mitigation"

Multimodal AI capable of handling complex and unpredictable driving scenarios

Remote Support Solution
for Autonomous Driving

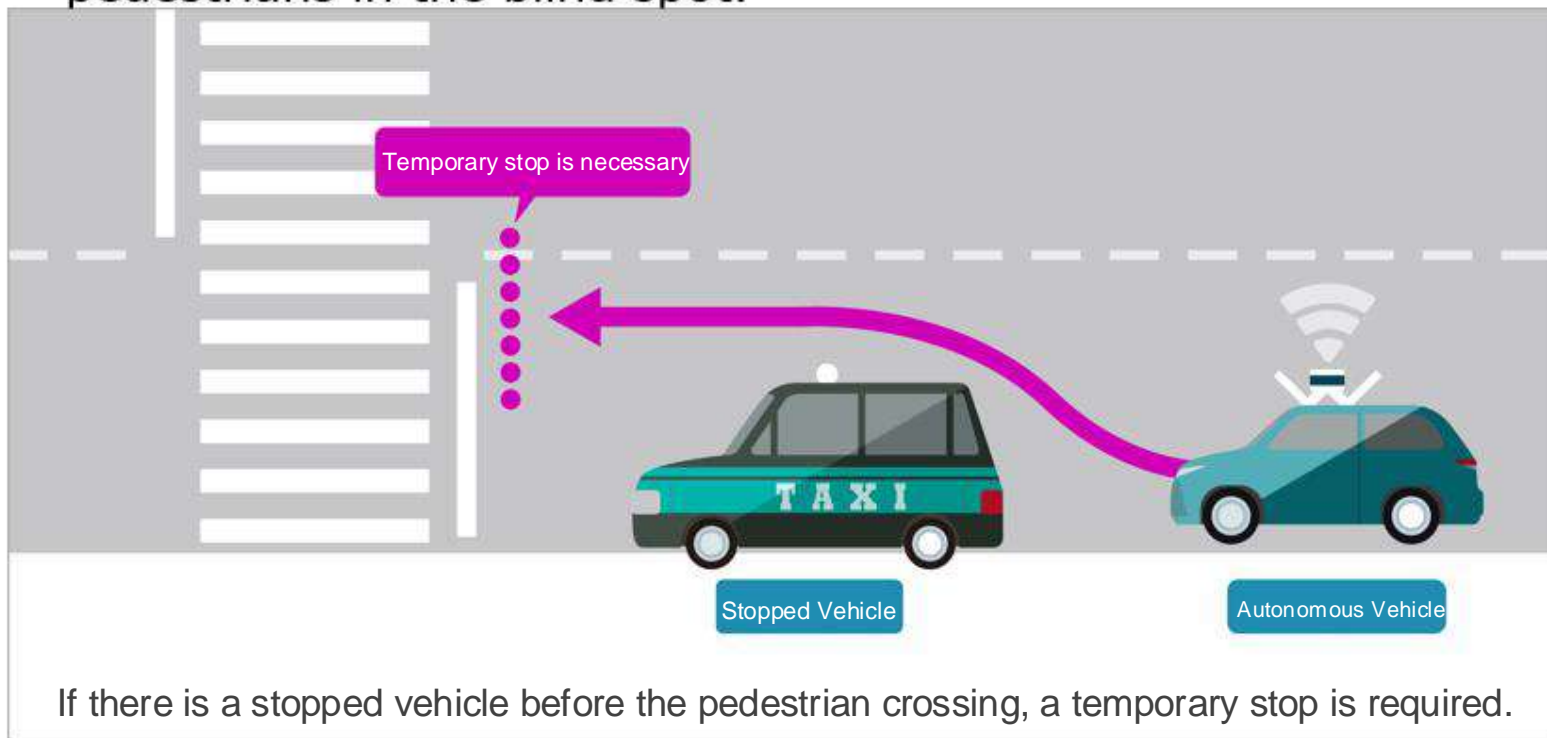## Delivered with Ultra-Low Latency and High Security

5G

AITRAS

Central Monitoring Center

Camera

Censor

Autonomous Driving System

Traffic Footage

Please explain ···

Prompt

TensorRT

Traffic Understanding Multimodal AI

Inference Result

Autonomous Vehicle

Edge AI Server

Remote Monitoring System
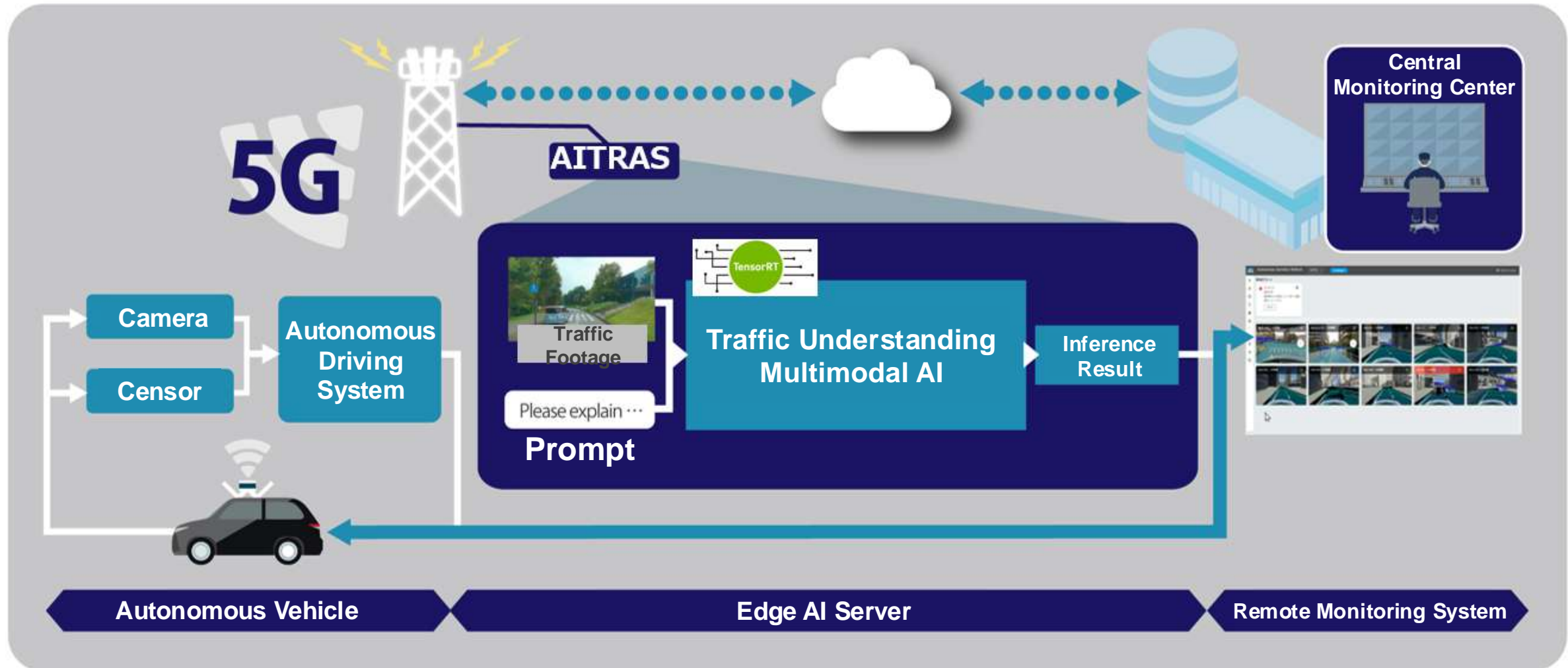
Demo Overview – Driving Scenario

"Driving in a situation where a vehicle is stopped in front of a pedestrian crossing"

Risk Factors :

When an autonomous vehicle approaches a pedestrian crossing, there is a possibility of colliding with pedestrians in the blind spot.

Temporary stop is necessary

Stopped Vehicle

Autonomous Vehicle

If there is a stopped vehicle before the pedestrian crossing, a temporary stop is required.

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Demo Overview - Driving Scenario
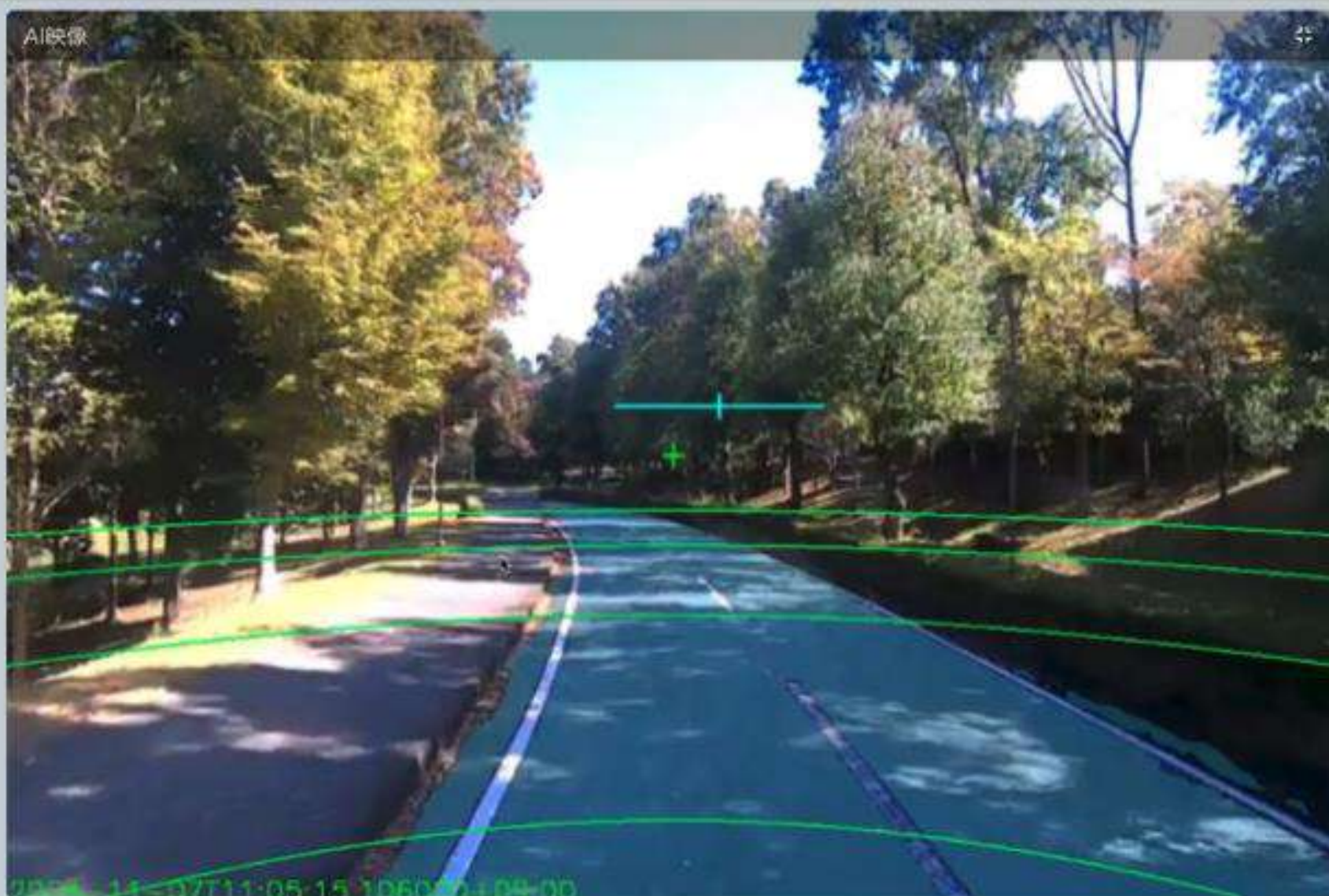
Monitor Screen

AI Inference Result

The car is slowing down at the straight road. Because the other car is stopping in the cross walk ahead.

The current level of risk is high. Because the pedestrian who may come out ahead is causing the risk of collision. Therefore, it is recommended to stop.

STATUS

◀ 戻る　　現在の運行監視 - Auto-Sokankan

AI映像

アラート　全て表示 ▾

🔔 11:05:15
マルチモーダル出力
The car is going straight at the straight road. Because there is no traffic in the roadway ahead. The current level of risk is low. Therefore, it is recommended to drive normally.

🔔 11:05:13
マルチモーダル出力
The car is going straight on the curve. Because there is no traffic in the roadway ahead. The current level of risk is low. Therefore, it is recommended to drive normally.

🔔 11:05:07
マルチモーダル出力
The car is going straight at the straight road. Because there is no traffic in the cross walk ahead. The current level of risk is low. Therefore, it is recommended to drive normally.

‖ 緊急停止　　**▶ 運行再開**

0 Mbps　QoD制御 OFF ⚪ ON　□ 自動制御　📞

AI Inference Result

The car is going straight at the straight road. Because there is no traffic in the roadway ahead.

The current level of risk is low. Therefore, it is recommended to drive normally.

STATUS