

Merging Support Information System for Autonomous Driving

October 2026

Mobility Business Unit

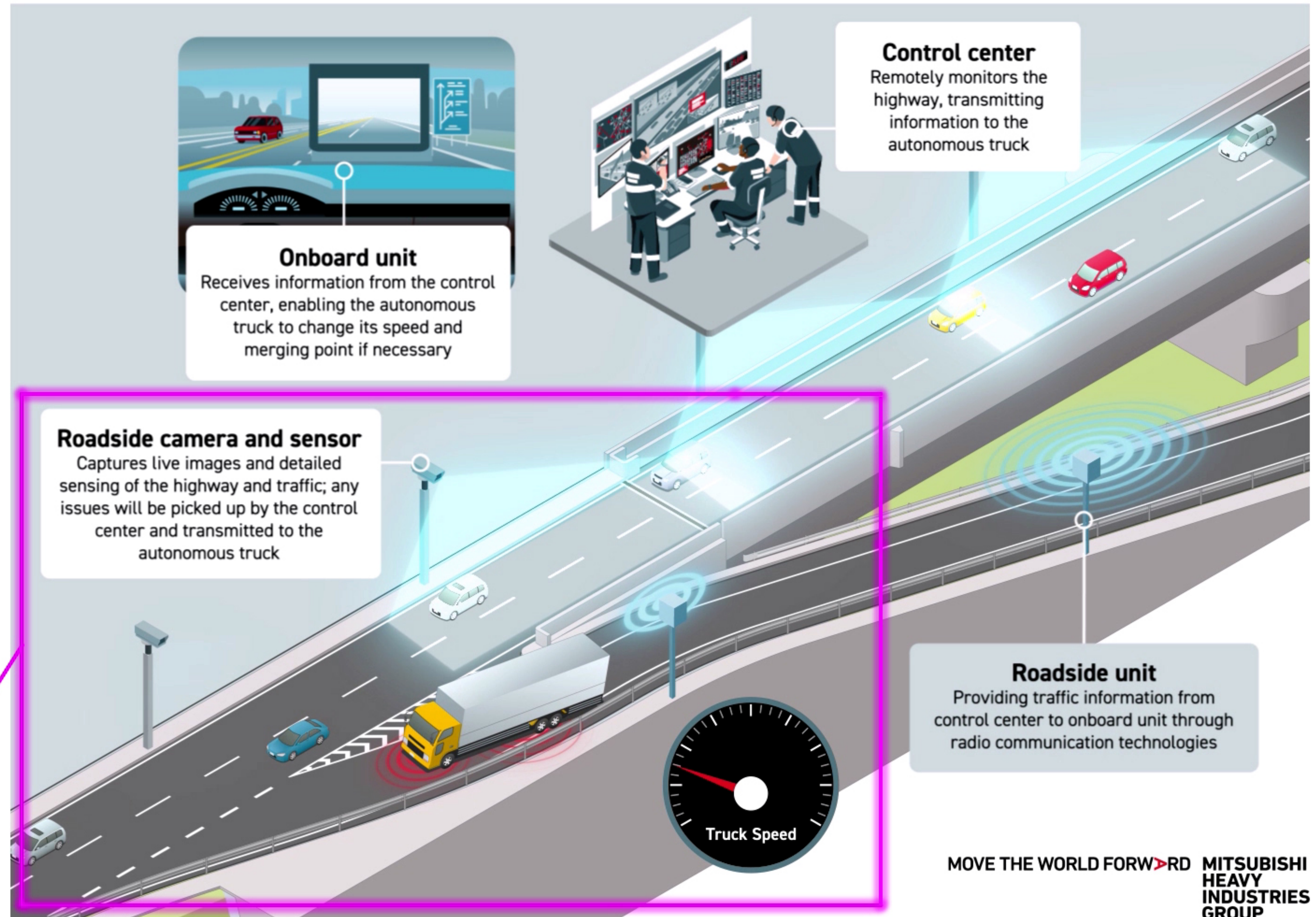
Mitsubishi Heavy Industries Machinery Systems, Ltd.



HOW AUTONOMOUS TRUCKS NAVIGATE HIGHWAYS

The autonomous trucking market — set to reach \$600bn by 2035 — is accelerating. Here's how driverless trucks can safely and efficiently transport freight from A to B.

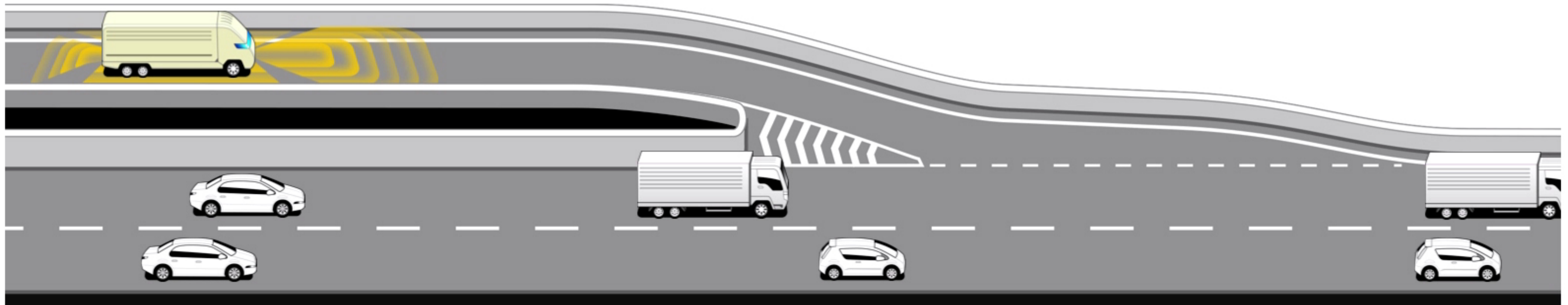
Our Scope



1. How an Automated Truck Merges from a Merging Lane

WITHOUT the Merging support Information System: Scene 1 of 4

Merging safely from a merging lane onto the mainline is a challenging task, even for an automated vehicle.

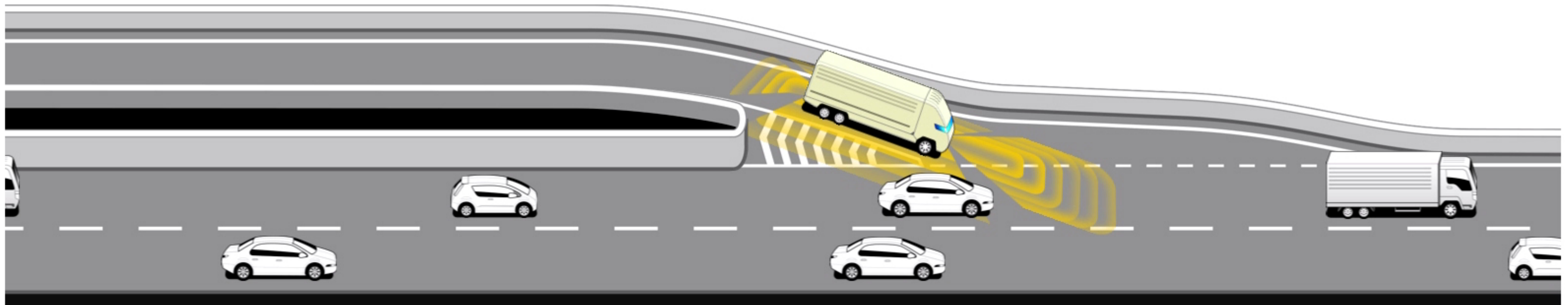


Walls and other structures prevent the truck's onboard sensors from detecting mainline traffic.

1. How an Automated Truck Merges from a Merging Lane

WITHOUT the Merging support Information System: Scene 2 of 4

Merging safely from a merging lane onto the mainline is a challenging task, even for an automated vehicle.

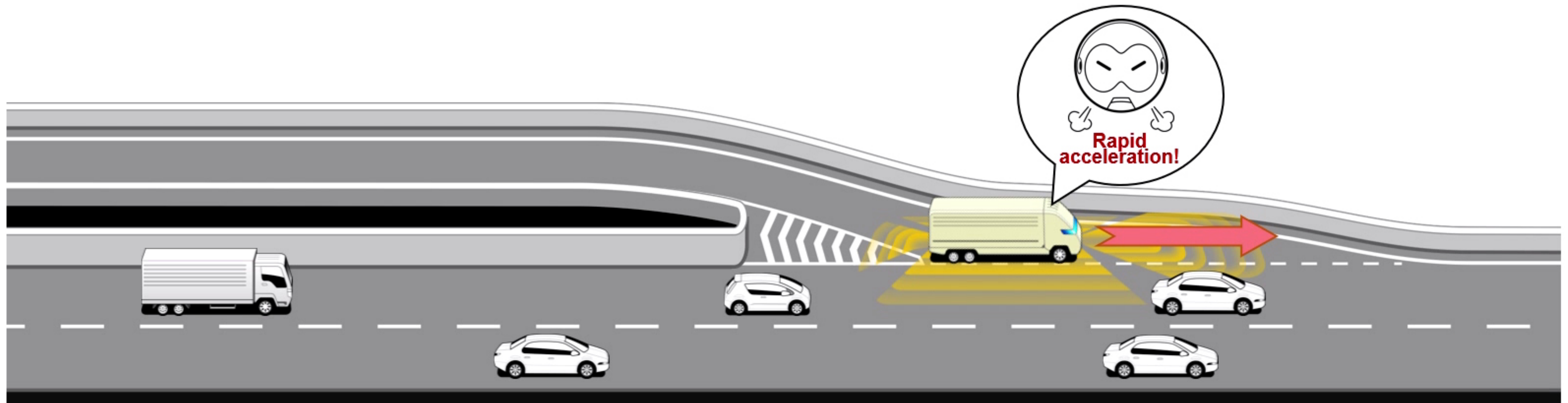


The onboard sensors cannot detect mainline traffic until the truck passes the obstructions.

1. How an Automated Truck Merges from a Merging Lane

WITHOUT the Merging support Information System: Scene 3 of 4

Merging safely from a merging lane onto the mainline is a challenging task, even for an automated vehicle.

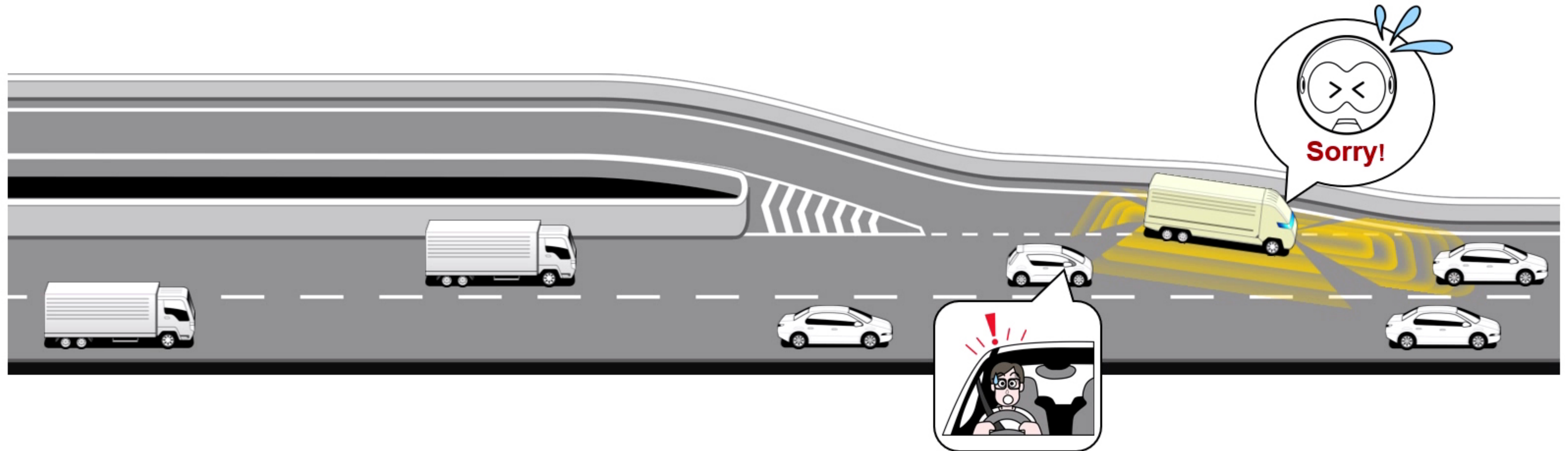


If the truck waits until it enters the acceleration lane to assess traffic, it may need to accelerate or decelerate suddenly. Whether automated or manually driven, trucks should avoid sudden speed changes to transport cargo safely.

1. How an Automated Truck Merges from a Merging Lane

WITHOUT the Merging support Information System: Scene 4 of 4

Merging safely from a merging lane onto the mainline is a challenging task, even for an automated vehicle.

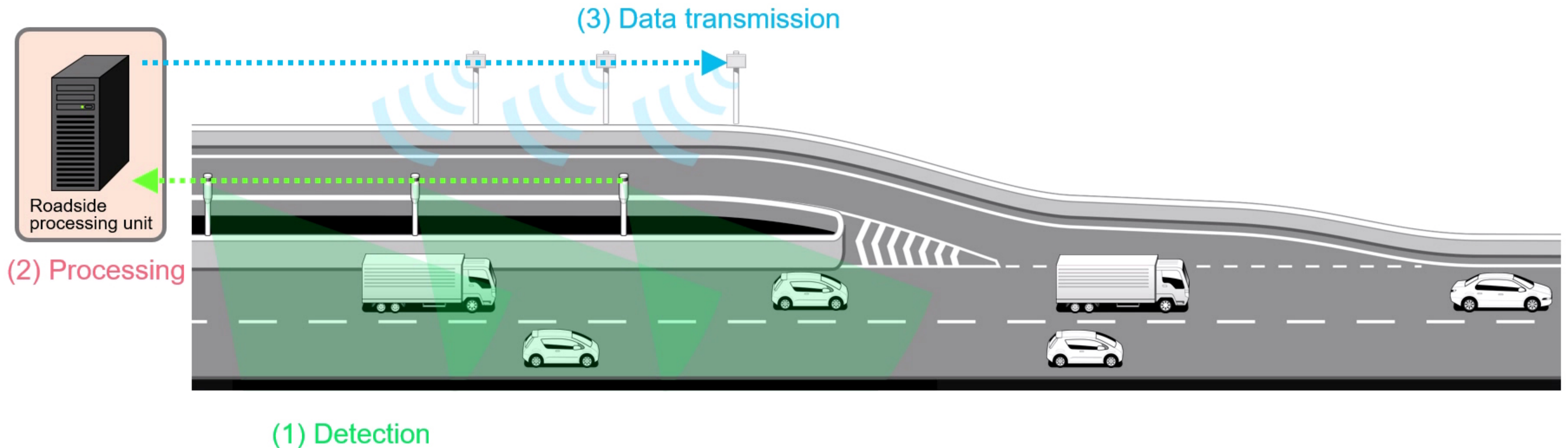


The truck may have to merge in a way that disrupts mainline traffic, putting itself and surrounding vehicles at risk.

1. How an Automated Truck Merges from a Merging Lane

WITH the Merging support Information System: Scene 1 of 4

The system helps automated trucks merge safely onto the mainline.

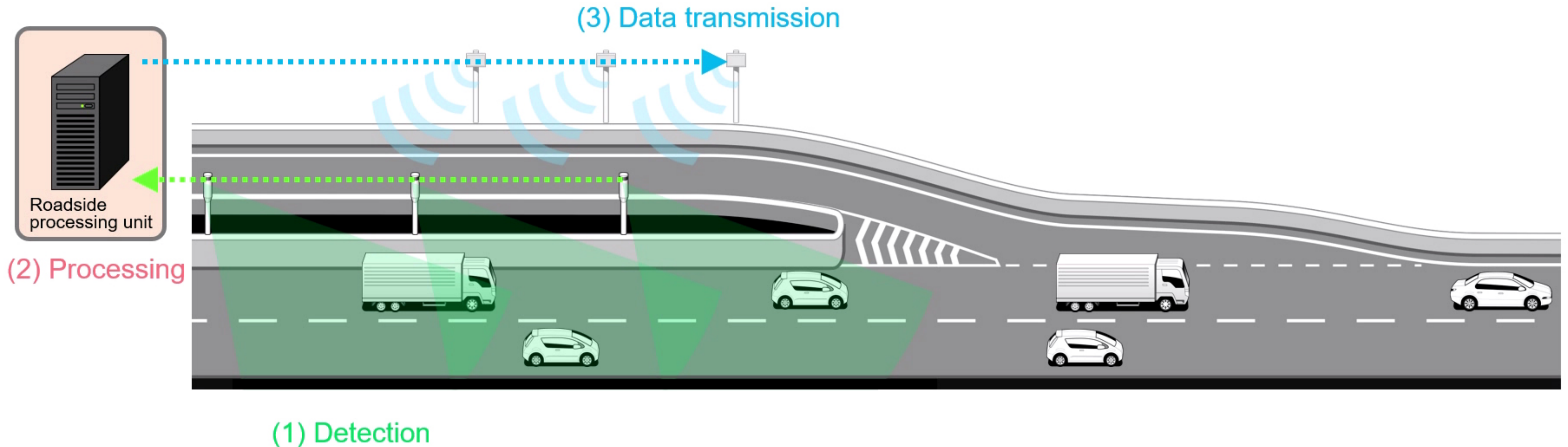


The Merging support Information System detects vehicle traffic conditions on the mainline, processes the detected data, and transmits information about mainline traffic to merging vehicles.

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WITH the Merging support Information System: Scene 1 of 4

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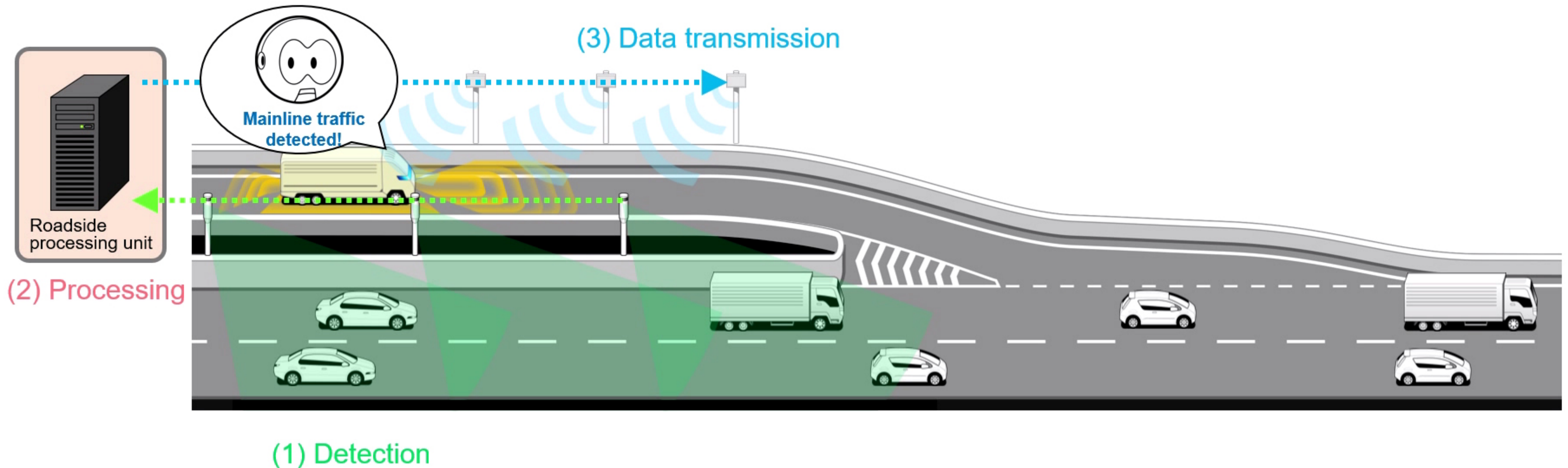


In this way, the system helps automated trucks merge safely.

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WITH the Merging support Information System: Scene 1 of 4

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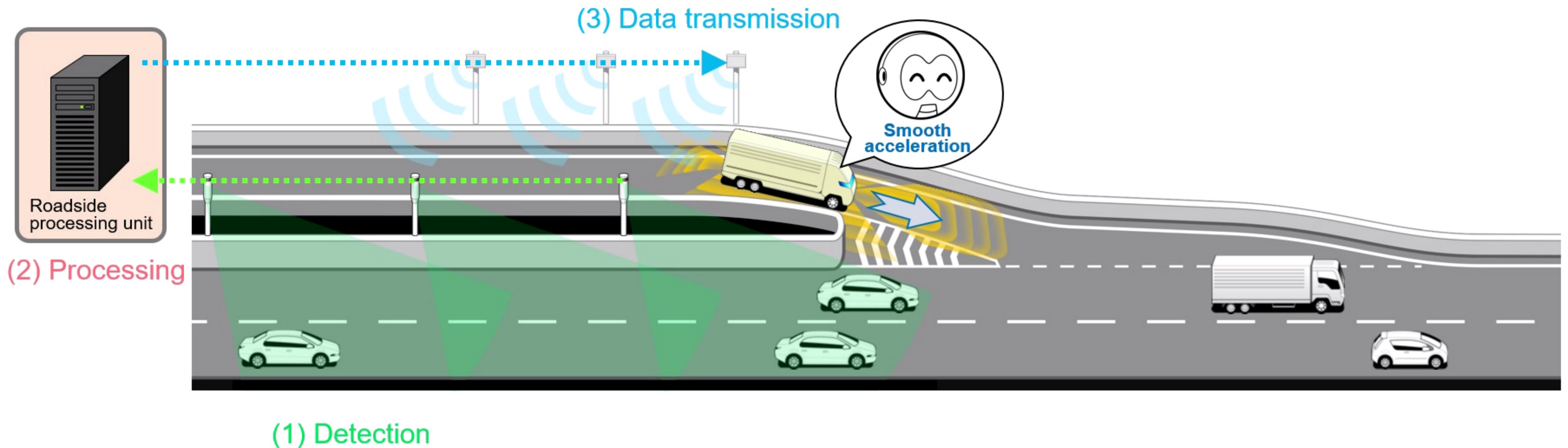


This allows automated trucks to assess mainline traffic before entering the acceleration lane and merge safely.

1. How an Automated Truck Merges from a Merging Lane

WITH the Merging support Information System: Scene 2 of 4

The system helps automated trucks merge safely onto the mainline.

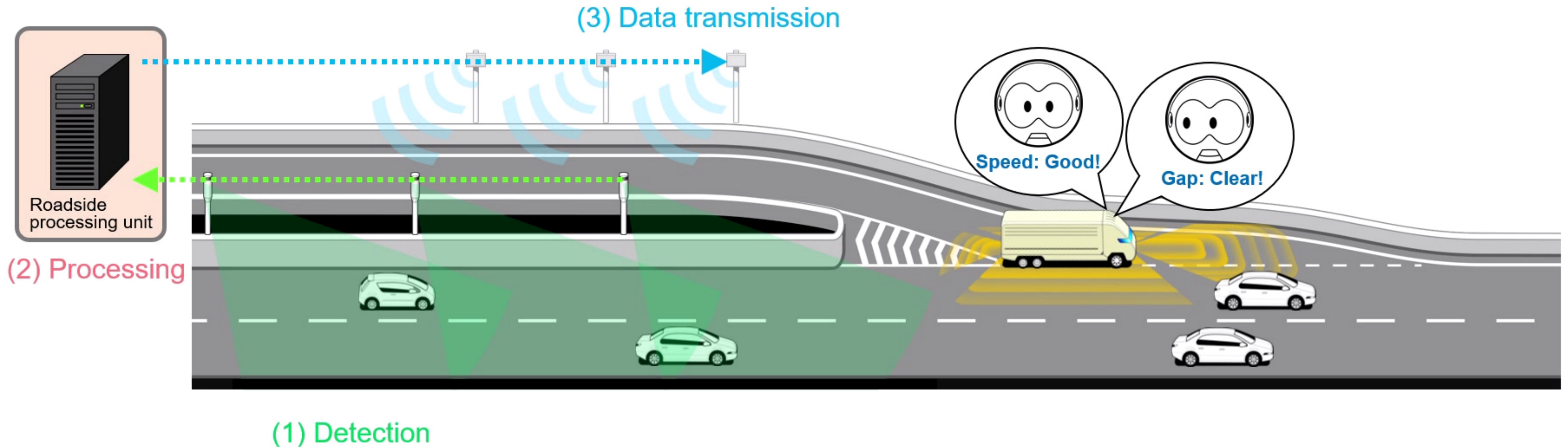


The automated truck identifies a suitable gap in the mainline traffic and adjusts its speed well in advance.

1. How an Automated Truck Merges from a Merging Lane

WITH the Merging support Information System: Scene 3 of 4

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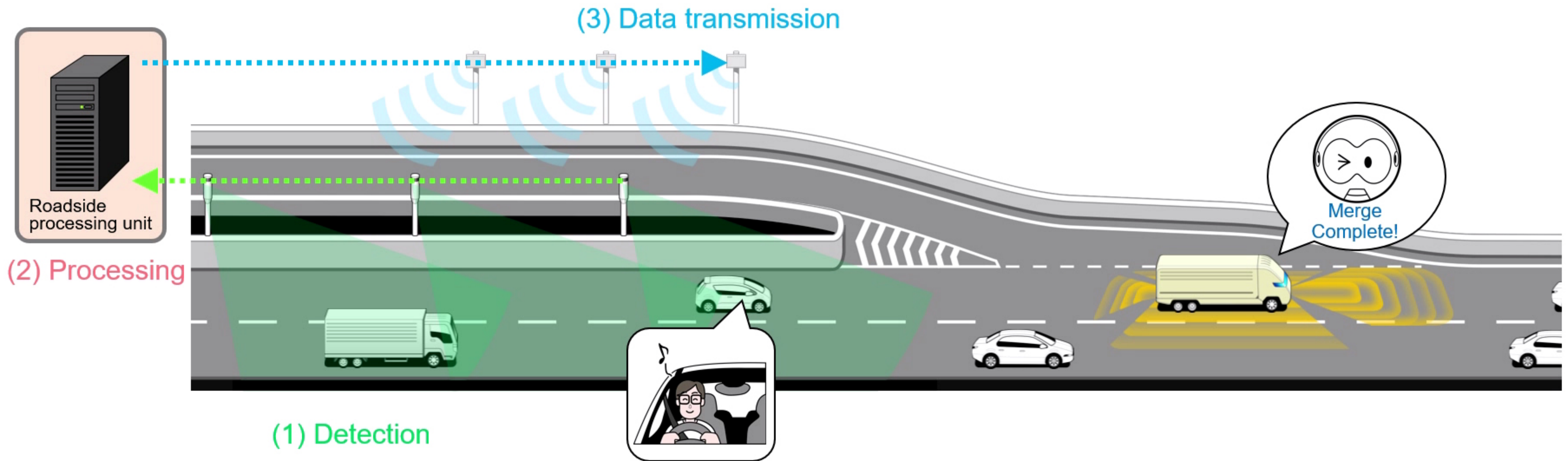


In the acceleration lane, the truck's onboard sensors detect mainline traffic and determine when it is safe to merge.

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WITH the Merging support Information System: Scene 4 of 4

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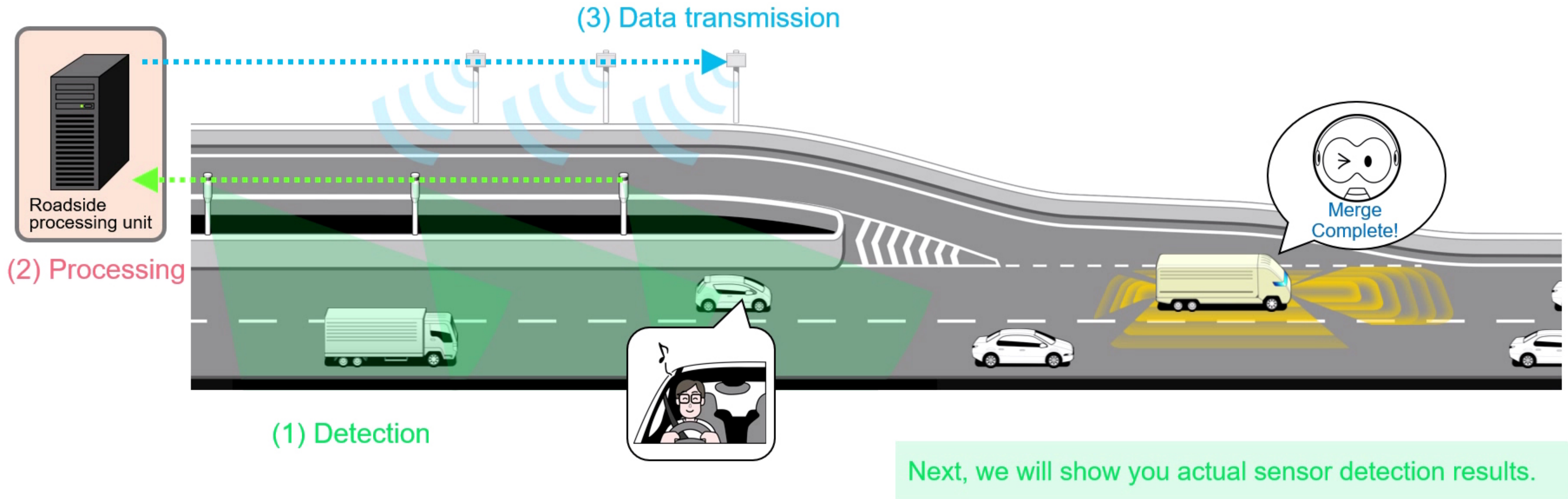


With the support information, the automated truck can merge safely without disrupting mainline traffic. The system also helps human drivers merge safely.

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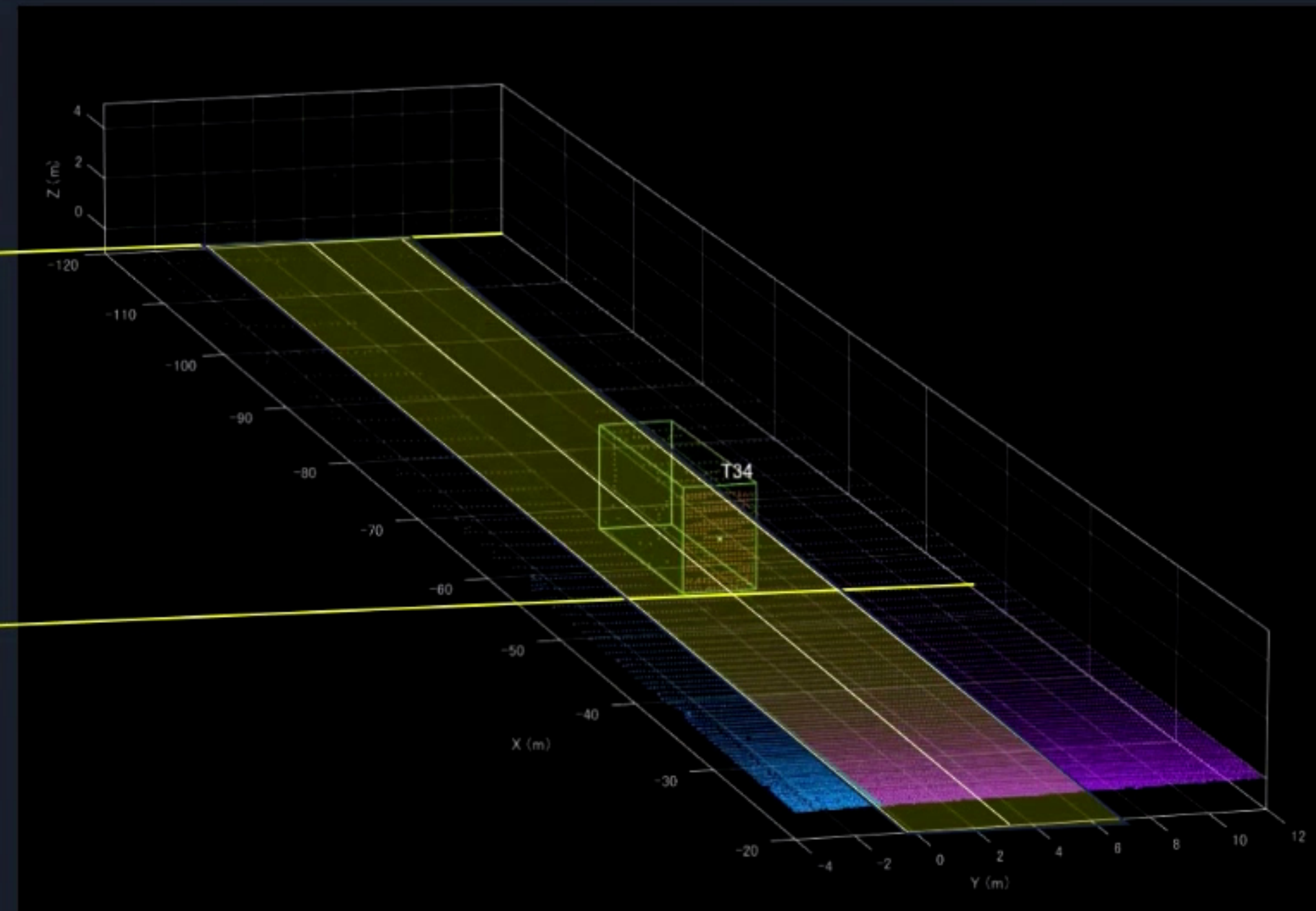


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2. Traffic Flow Sensing Technology - 3D-LiDAR Sensors Can Detect Vehicles!

Detection Results at Hamamatsu Service Area (Data Collected on December 16, 2024)

16:13:35 ~ 16:13:53



The 3D-LiDAR sensor detects multiple vehicles simultaneously, even at night.
Our technology digitizes traffic flow for precise analysis and safer merging.

