

SIP-adus Workshop 2018
Next Generation Transport Plenary Session
Nov. 14, 2018
Tokyo, Japan

Automated Driving of Trucks in Japan

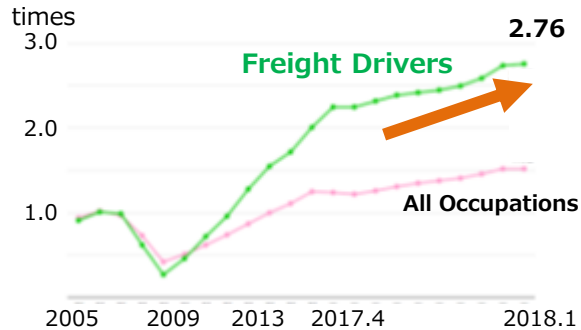
Hidehiko ENOMOTO
SIP-adus/Hino Motors, Ltd.



Current Situation of Freight Operators

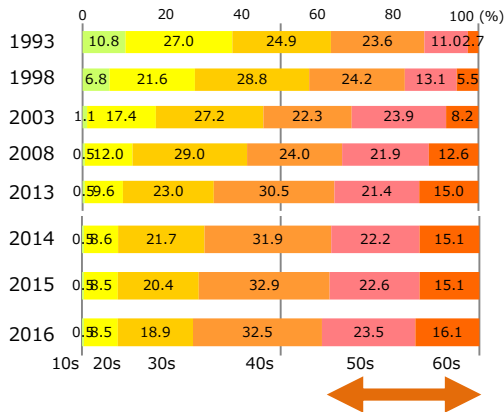
- Driver **SHORTAGE**
- Driver **AGING**
- **INCREASING** transportation goods

Jobs-to-Applicants Ratio



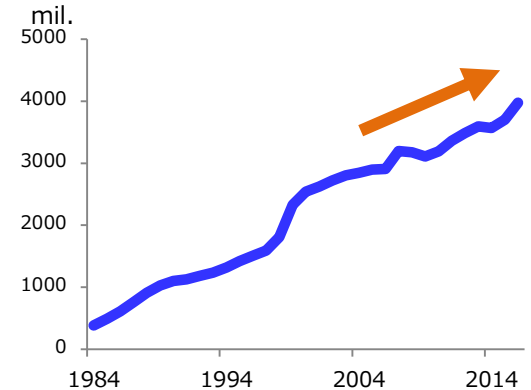
Source: Employment Security Operation Statistics, MLW

Driver's Age



Source: Current Situation of Truck Transportation, Trucking Association

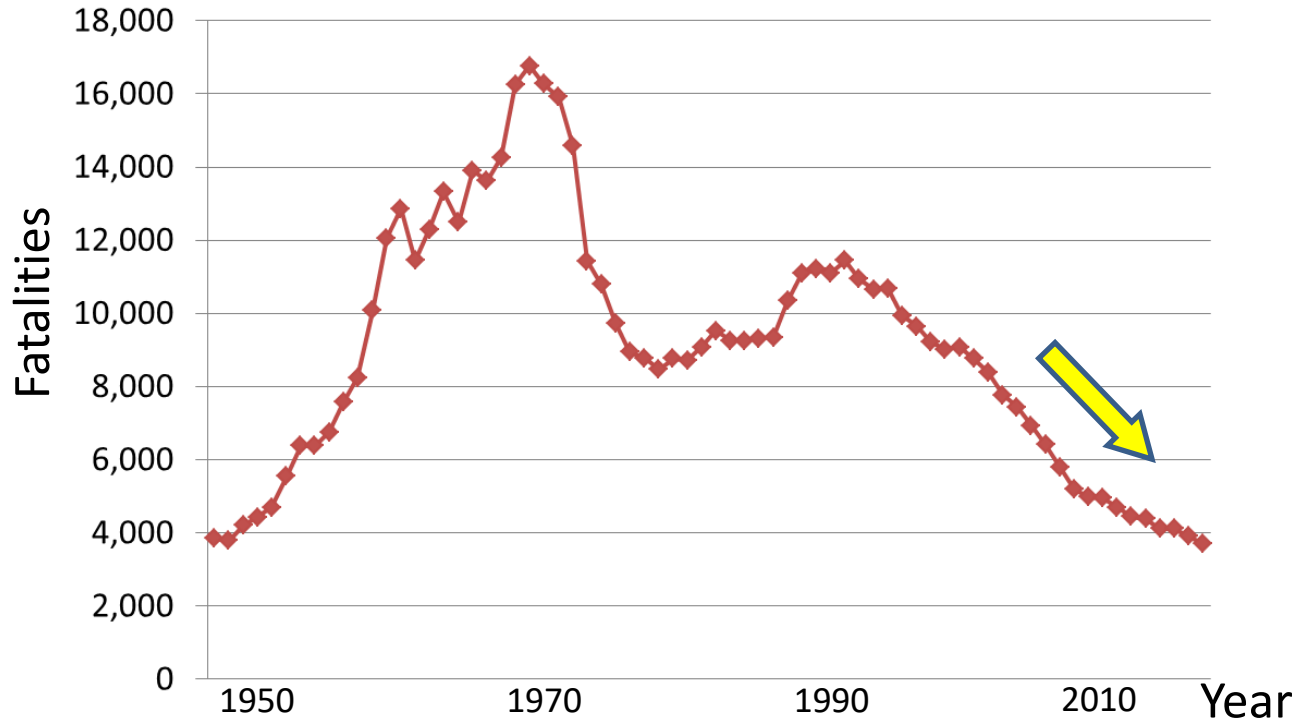
Home Delivery Packages



Source: MLIT document

Traffic Accidents

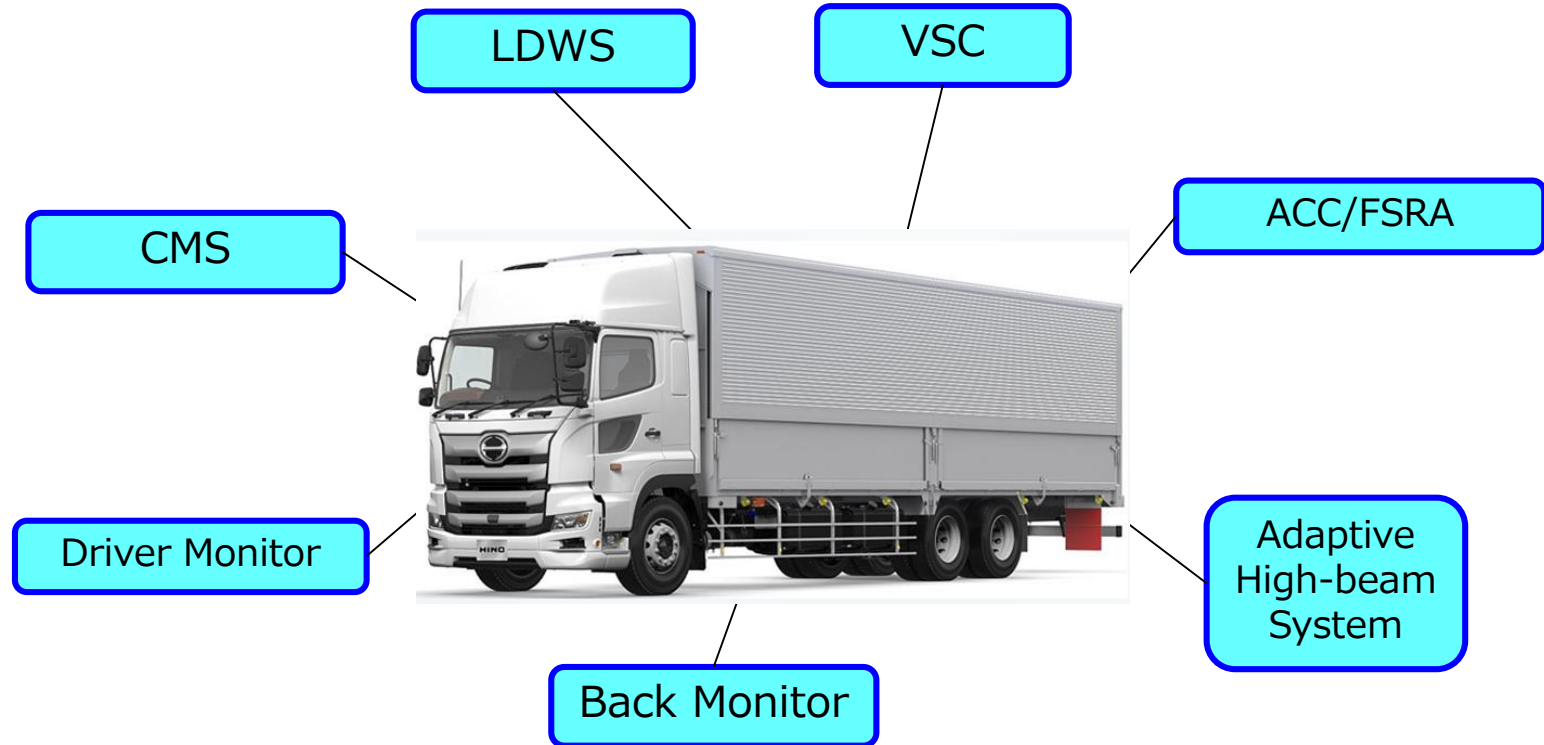
- Decreased but **NOT ZERO** yet



Source: Traffic accident statistics, ITARDA

ADAS Systems for Trucks

- CMS and other ADAS systems are **STANDARD** equipment



Truck Platooning



※ METI: Ministry of Economy, Trade and Industry

MLIT: Ministry of Land, Infrastructure, Transport and Tourism




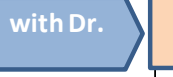
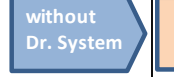
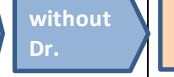


- METI /MLIT lead the development with cooperation of industries

Roadmap of Automated Driving

Category	Level	Technology	Expected
POV	Lv2	Semi-Auto Pilot	by 2020
	Lv3	Auto Pilot	2020
	Lv4	Automated Driving on Expressway	2025
Freight	Lv2 -	Manned platooning on Expressway	by 2021
		Unmanned platooning on Expressway	after 2022
	Lv4	Automated Driving on Expressway	after 2025
Mobility Service	Lv4	Unmanned service in Specified Area	by 2020
	Lv2 -	Automated Driving of Coach on Expressway	after 2022

 Development  Demonstration

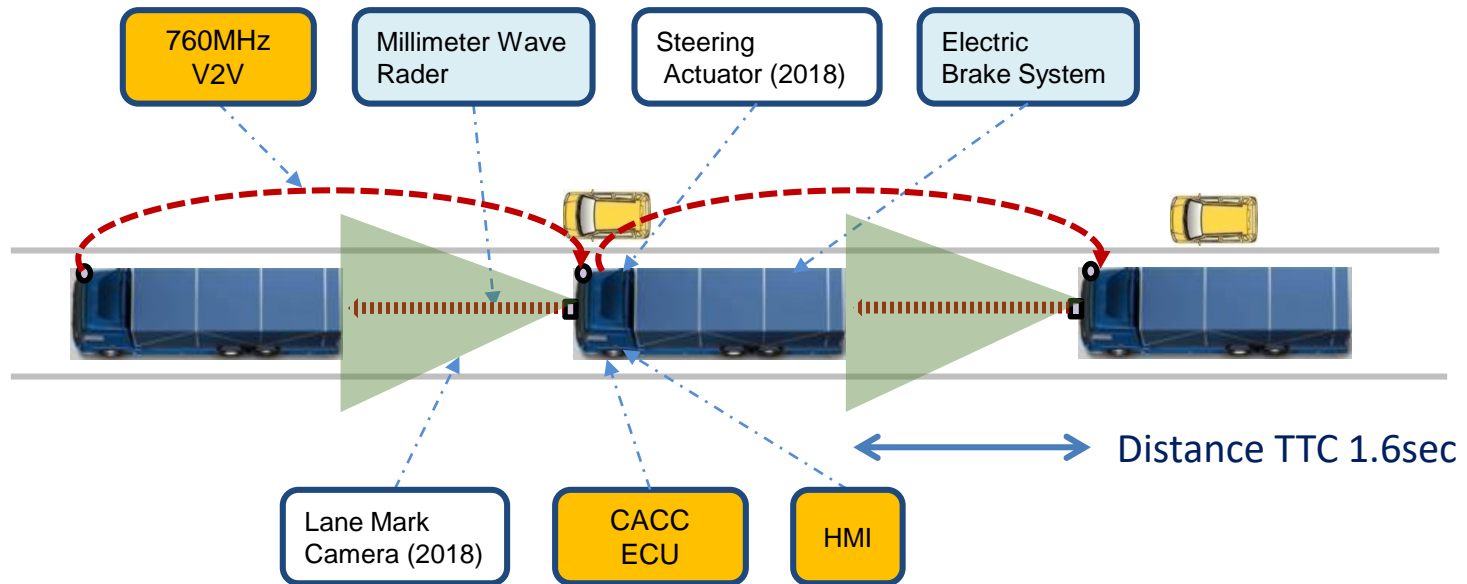
Development and Demonstration of Truck Platooning

	2017	2018	2019	2020	2021	2022		
Manned Platooning							※	
Unmanned Platooning								※

※ Commercialization

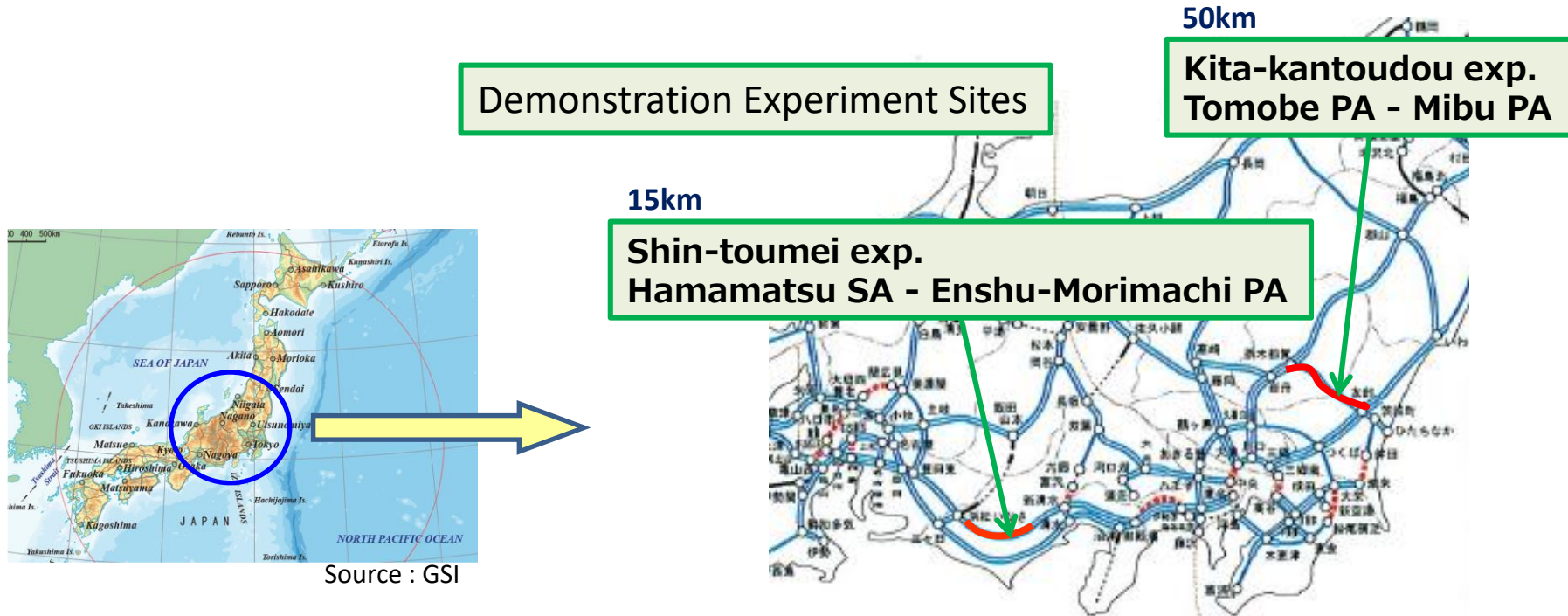
Truck Platooning Demonstration Jan. – Feb. 2018

- **Four truck manufacturers** prepared trucks with CACC



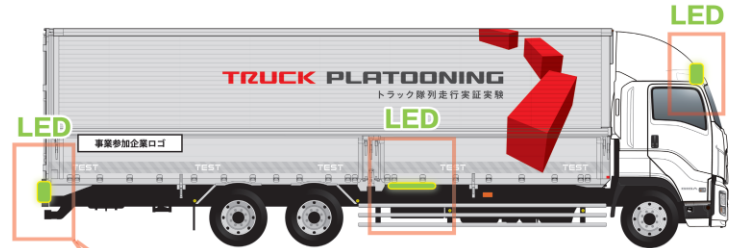
Truck Platooning Demonstration Jan. – Feb. 2018

- World first **MULTI-BRAND CACC** on public highways



Truck Platooning Demonstration Jan. – Feb. 2018

- Unified logotype and **blinking green LED** were given

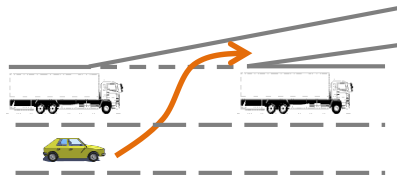
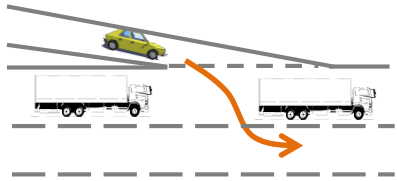


Truck Platooning Demonstration Jan. – Feb. 2018

MOVIE

Truck Platooning Demonstration Jan. – Feb. 2018

- **Interactions with other traffics** were seen at the Interchanges



Truck Platooning Demonstration Jan. – Feb. 2018

- **Other road users** said,
 - Steady operation of platooning gave **safe impression**
 - Better to know **total length and number of trucks** in platoon
 - Better to show **clear sign** that these trucks were platooning
 - Rule making is necessary for **interaction at the interchanges**
- **Drivers of platooning trucks** said,
 - Interactions with other traffic** at the interchanges unavoidable
 - Overtake of platoon by other traffics **needed additional time**

Truck Platooning Demonstration Nov. – Dec. 2018

- Various roads and vehicle conditions, new functions will be tried

Demonstration Experiment Sites

Dec. 4 - 6

Shin-toumei exp.
Hamamatsu SA - Enshu-Morimachi PA

- ✓ Lane Keep Assist

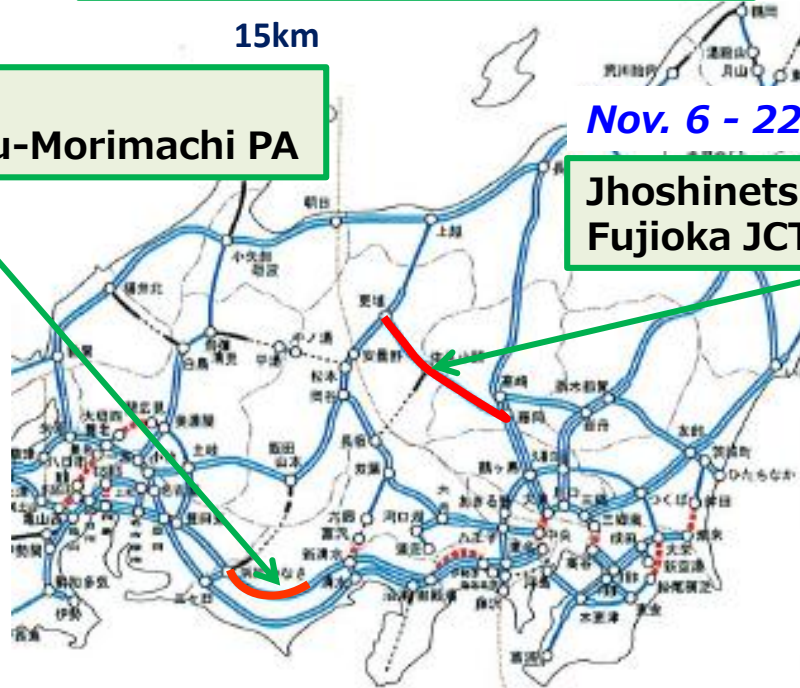
15km

Nov. 6 - 22

Jhoshinetsu exp.
Fujioka JCT - Koushoku JCT

120km

- ✓ Up and Downs
- ✓ Curves
- ✓ Tunnels
- ✓ Vehicle weight



Truck Platooning Demonstration Nov. – Dec. 2018

- We have been experiencing **curves, rains,**



Truck Platooning Demonstration Nov. – Dec. 2018

- Tunnels, climbing lanes, lane closures



Future

- Automated driving of trucks will help to improve safety and efficiency of freight operation
- Truck platooning seems to be one of the first application of automated driving.
- Understanding of society and other road users, together with some legislation and infrastructure development are necessary for early installation.

Thank you