



Ports & terminals

Automation and  
robotics

# Enabling co-existence of human and automated trucks in ports & terminals

Developed by :



**TNO**



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Operational fields

Technologies

Solutions



# ENABLING CO-EXISTENCE OF HUMAN AND AUTOMATED TRUCKS IN PORTS & TERMINALS

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## Solution description

Safely operated **L4 automated and remotely operated trucks** running in existing terminals and port environments.

Automated and human driven operations can co-exist without disrupting terminal activity.

Demonstration and validation is conducted within MODI project by APM terminals, DAF trucks and Port of Rotterdam with support of the Dutch Technology centre, TNO.

Focusing on logistics coordination and support procedures.



## Benefits

- Enhance **efficiency and throughput/capacity** at ports/terminals reducing idle time.
- **Lower emissions** (electric trucks) and **fuel consumption** due to optimized container and truck moves
- **Safer operations** by reducing manual yard traffic (expecting overall improved logistics efficiency).

## Main beneficiaries:

- Terminal operators
- Port equipment providers



Technology readiness level : **6-7**  
Implementation stage : **Pilot**

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## Use Case Netherlands: Port operations

1. Remote control and automation of trucks/vehicles at confined areas. Handover of control of the vehicle at arrival to the control tower.
2. System for mixed traffic of current Automated Guided, non-automated and automated vehicles in confined areas, with a central control tower concept in an operational environment.
3. Mixed traffic driving in normal terminal operation between large numbers of manually driving trucks.

Join CCAM Logistics Task Force to know more on MODI solutions!



Would you like to know more?  
Take contact :



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