



# AUTOMATING HORIZONTAL TRANSPORT

**Learnings and insights from over one year of live operations with human-assisted autonomy**



**Peter Szelei**  
FERNRIDE, Senior Director Business Development



**Toomas Uibokant**  
HHLA TK Estonia, Operations Manager





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**HHLA TK Estonia:**  
Largest specialised port  
terminal in Estonia

**FERNRIDE:**  
Autonomous, electric  
yard operations

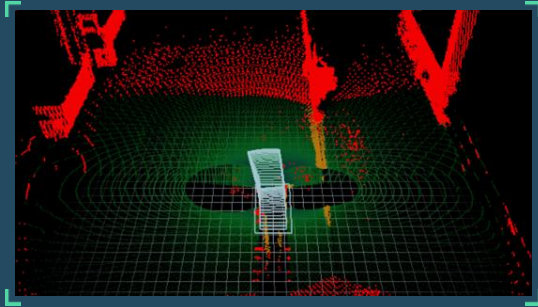


## Trusted by Industry Leaders



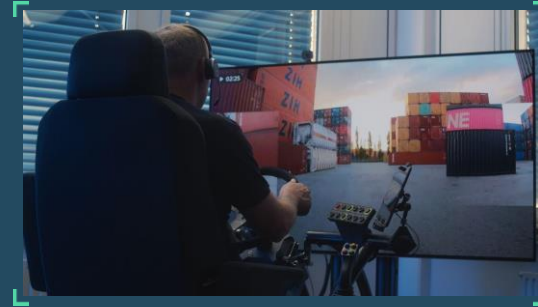
# Human-Assisted Autonomy

Benefit from the advantages of automation through unique human-machine collaboration.



## Autonomy

Gradually automate all horizontal transport tasks through technology stack trained towards 99% automation

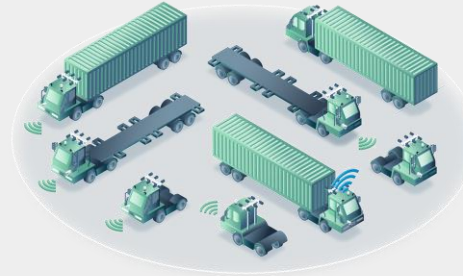
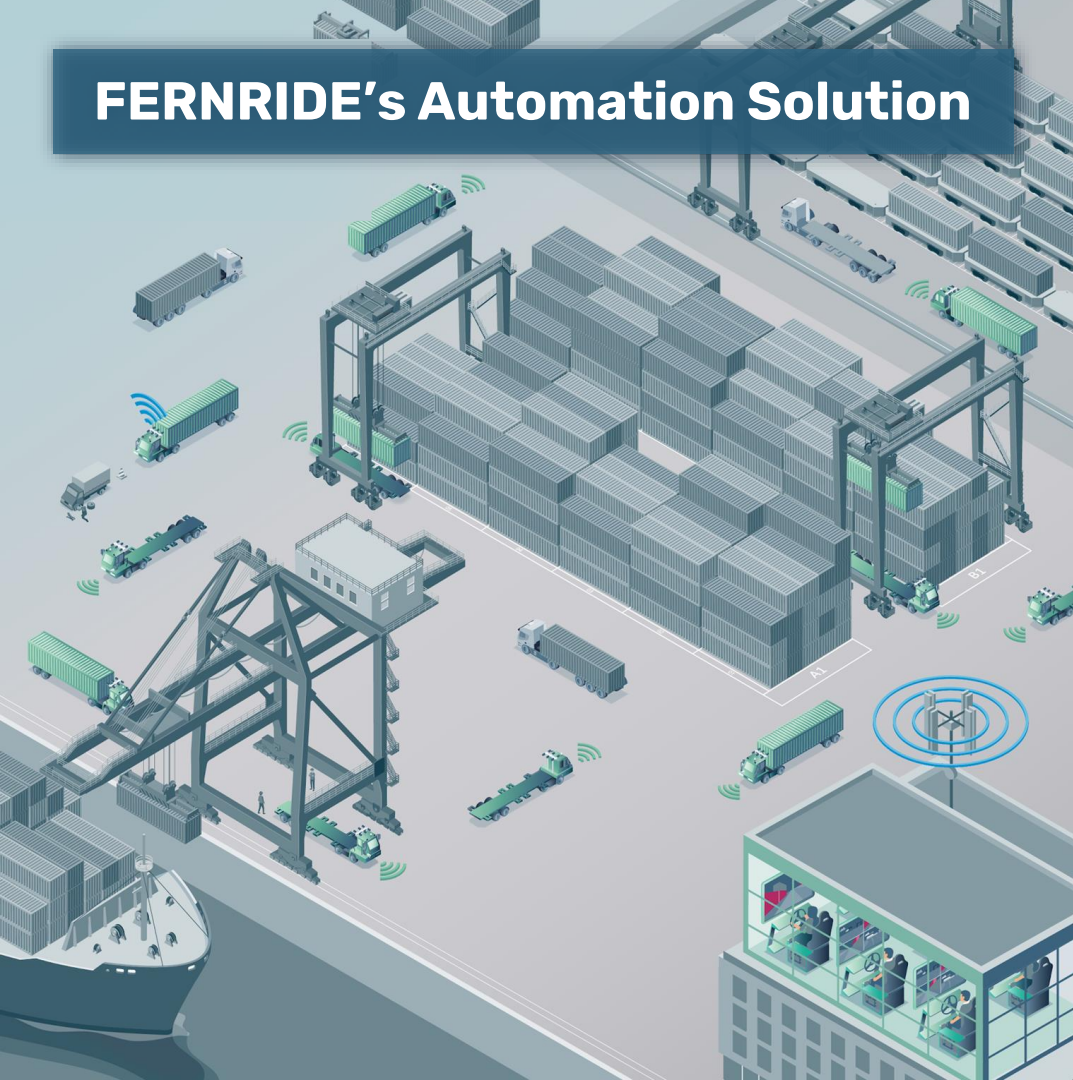


## Teleoperation

Operate with near 100% system availability through efficient handling of edge cases by human-in-the-loop



# FERNRIDE's Automation Solution



**FERNRIDE-enabled  
Autonomous Fleet**

**Operations  
Control Station**

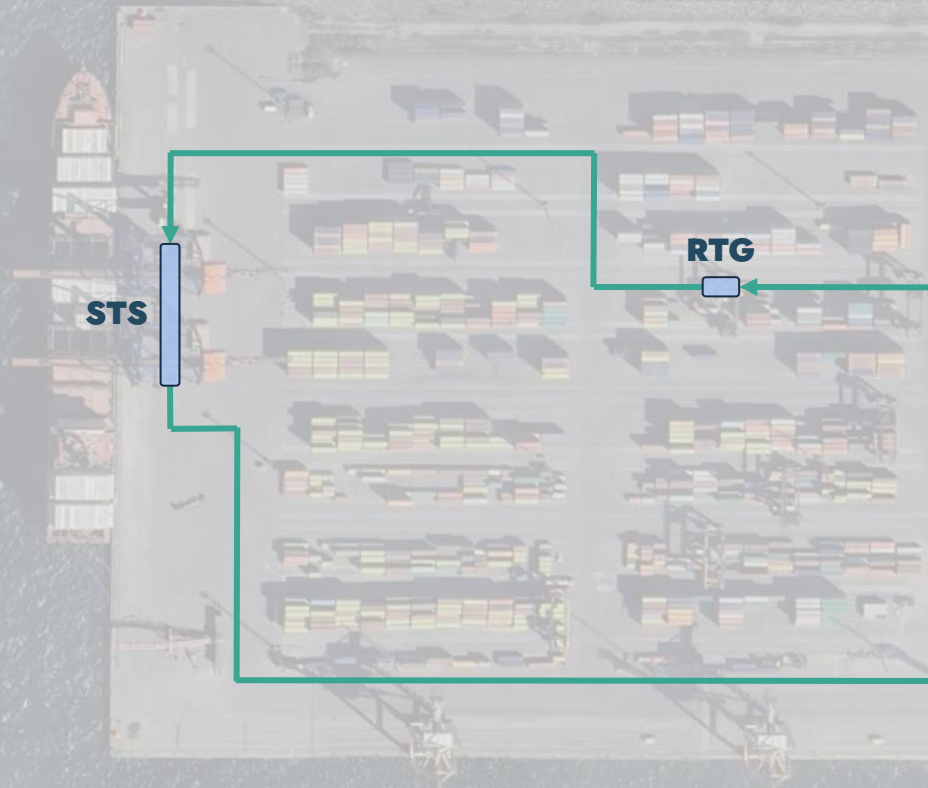


**Management Suite  
& TOS integration**



# Human-Assisted Autonomy in Operations

Responsibilities of remote operators during horizontal container transport tasks.



## Characteristics and Conditions

- Autonomous terminal tractors operate alongside manual container handling equipment
- Safety information (e.g., warning signs) at terminal regarding autonomous operations
- Mixed traffic with external traffic participants (e.g., HD trucks, passenger cars, pedestrians)
- Harsh weather conditions (e.g., -20 to +40 °C, snow, strong winds)
- Connectivity through public LTE

# Automated Horizontal Container Transport

## SYSTEM RELIABILITY

Prioritizing **system uptime and reliability** in mixed traffic through human-assisted autonomy.

## SAFETY

Industry-leading position with **end-to-end CE conformity** design.

## FLEXIBILITY

Converting existing vehicle fleets and processes, incl. **brownfield integration**.

## PRODUCTIVITY

Up **10x productivity** improvements, lower TCO.



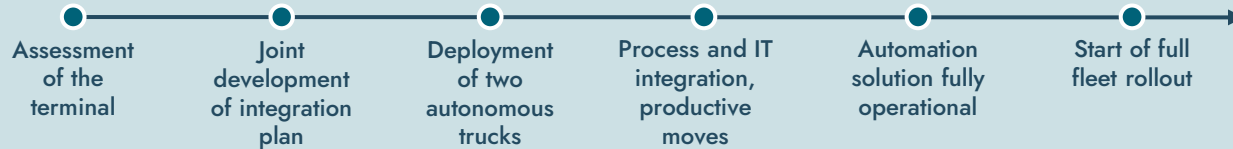
# FERNRIDE & HHLA TK Tallinn ( Estonia)

Automated Container Transport in mixed traffic and in live operations

## Milestones:

- Autonomy fully deployed
- Full TOS and IT systems integration
- Build-up of control rooms at the terminal
- Daily container handling in live operations
- Training of HHLA personnel (operators)
- Preparation of fleet roll-out

## Developing a solution for waterside and landside processes





# FERNRIDE & HHLA TK Tallinn (Estonia)

Learnings from kick-off to starting daily operations with productive moves



- Planning and execution: Strong collaboration is vital
- Operational and software (TOS) integration
- Solution enables flexibility on a daily basis
- Gradual rollout allows the highest operational uptime
- Automated vehicles deliver operational excellence
- Reliable operations in all weather conditions

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## **VIDEO showing the operations**

**Booth: K54**



**Peter Szelei**  
Senior Director Business Development  
Mail: [peter.szelei@fernride.com](mailto:peter.szelei@fernride.com)  
Phone: +49 151 2911 0704



**Toomas Uibokant**  
Operations Manager  
Mail: [toomas.uibokant@hhl-tk.ee](mailto:toomas.uibokant@hhl-tk.ee)

