UIRR
INTERNATIONAL UNION FOR ROAD-RAIL COMBINED TRANSPORT

4th Florence Intermodal Forum

AUTOMATION IN ROAD-RAIL COMBINED TRANSPORT

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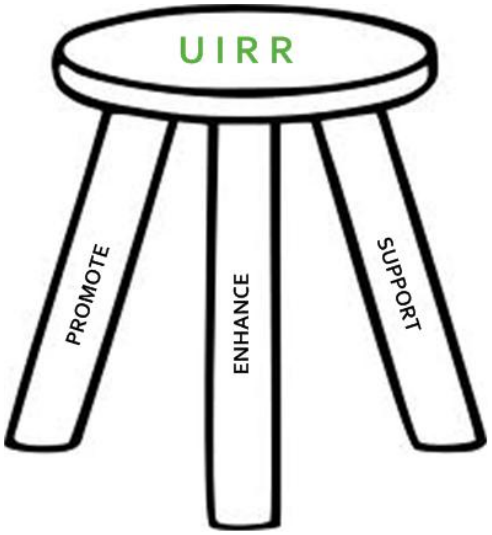
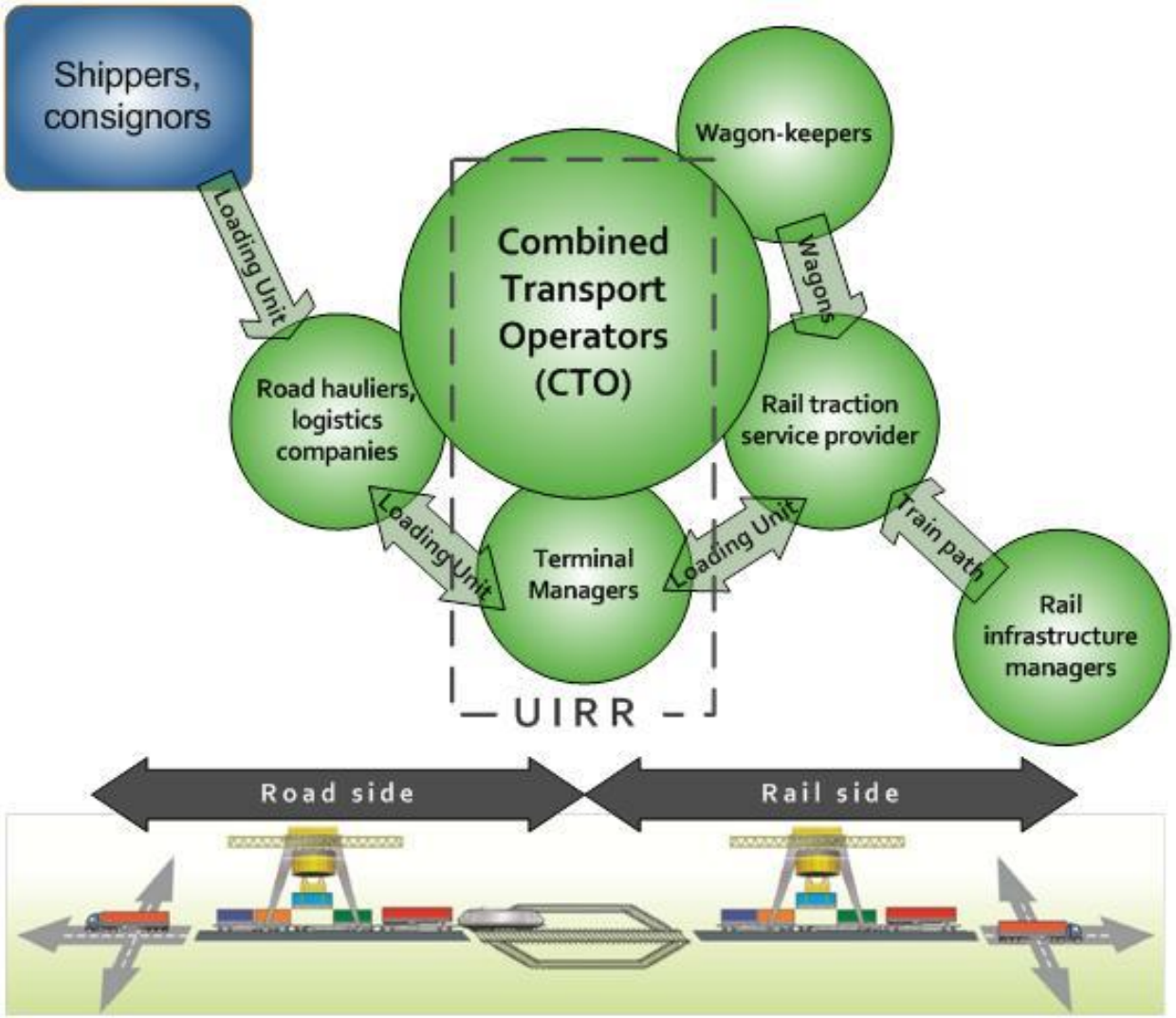
UIRR - Overview

- **Members**: Combined Transport Operators and Terminal Managers, who enable the efficient insertion of rail into transport-chains (29 in total)
- **Logistics companies, road hauliers**: customers as well as shareholders of UIRR Members
- **Performance**: UIRR Members handled about 50% of European Combined Transport in 2015
- **Mission / Strategy:**
  - PROMOTES the public understanding and appreciation of Road-Rail Combined Transport,
  - ENHANCES its development and the proliferation of industry best practice,
  - SUPPORTS the daily operation of European Combined Transport with a series of services
- **UIRR**: founded in 1970
  - seat in Brussels since 1988



UIRR – The Road-Rail CT chain and functions



Before automation… digitalisation of some critical aspects

- Implementation of interoperable systems and standards to integrate all freight players in the logistic chain
- Freight e-documents, harmonised for public and private players (e-consignment note)
- Data democracy (data sharing) – real-time data available for all involved freight players, free of charge and restrictions
- Access to European-wide reference files (loading units, wagons, infrastructure data, location codes)

Which elements could be automated in CT ?

- **'Rail' Part**
  - Automation in rolling stock
    - Autonomous traction equipment on main and secondary line
    - Autonomous/intelligent freight wagon/automatic coupling
  - Automation in the marshalling yards
    - Automatic sorting and building of trains
  - Automation in the CT terminals
    - Train pre-departure and arrival controls
    - Transhipment operations
    - Check-in/out controls
  - Automation for train controlling
    - Automatic checks during train journeys

- **'Road' Part (last mile deliveries)**
  - Automation in the road vehicles (fully autonomous truck deliveries between terminals and logistic depots)
  - Automation in boxes (automatic handling of boxes – modular units)
  - Automation in packaging and handling of goods (optimisation of unit capacity)

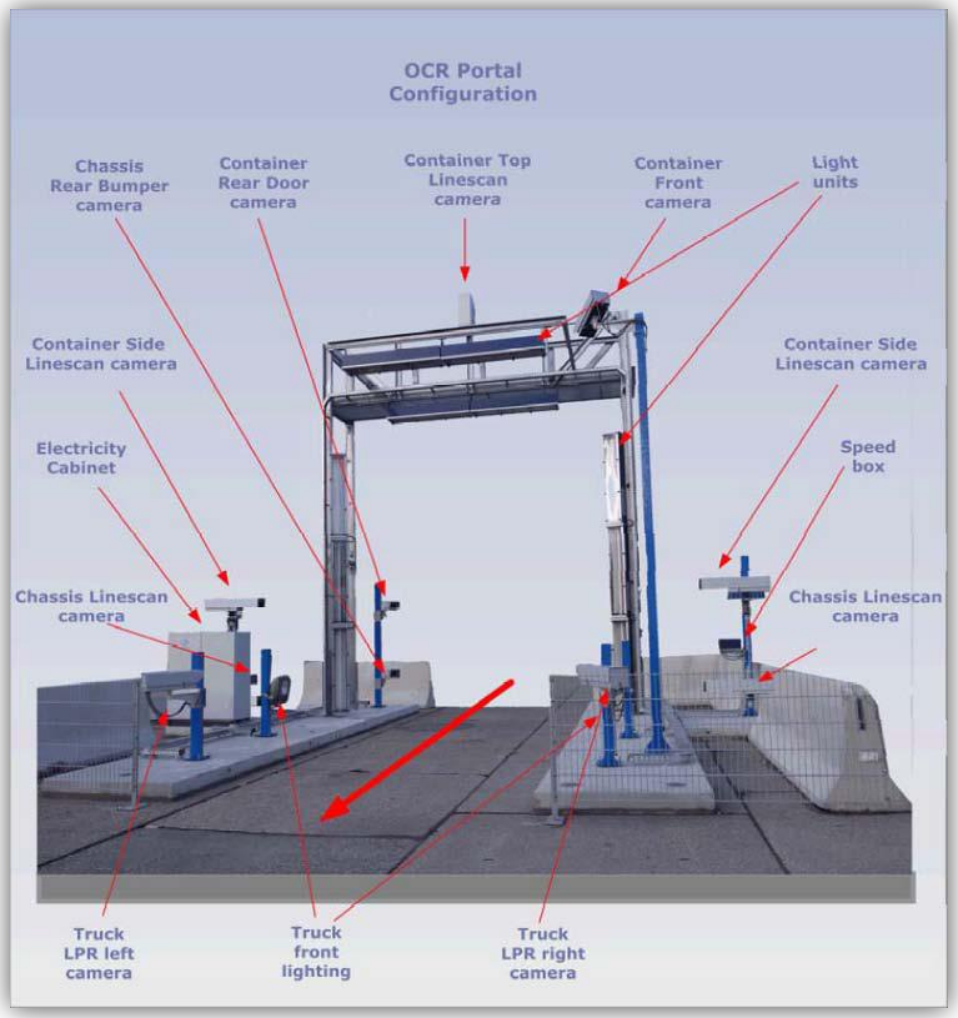
- **Intelligent freight wagon**

Loading unit / cargo monitoring (ILU owner & goods, RU)
Predictive maintenance (wagon keeper)
Load optimisation (axle weight, total weight, composition)
Data transfer and sharing (RU, wagon keeper)

=> Result : cost increase per wagon (leasing + 30% in some cases)

Automation in CT: some examples…

- **CT Terminals: pre-departure / arrival controls (road side)**



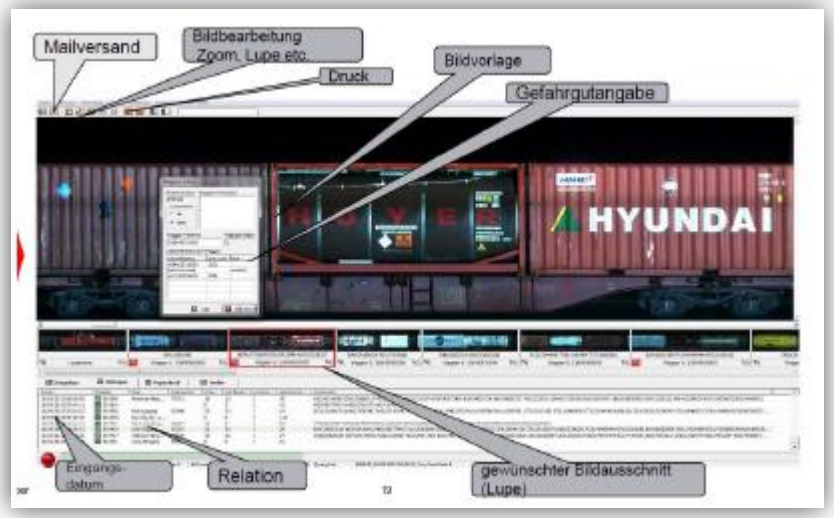
Main targets

• Reduce of the waiting times for the trucking companies

• Improve overall customer satisfaction with CT services

Automation in CT: some examples…

- **CT Terminals: pre-departure / arrival controls (rail side)**



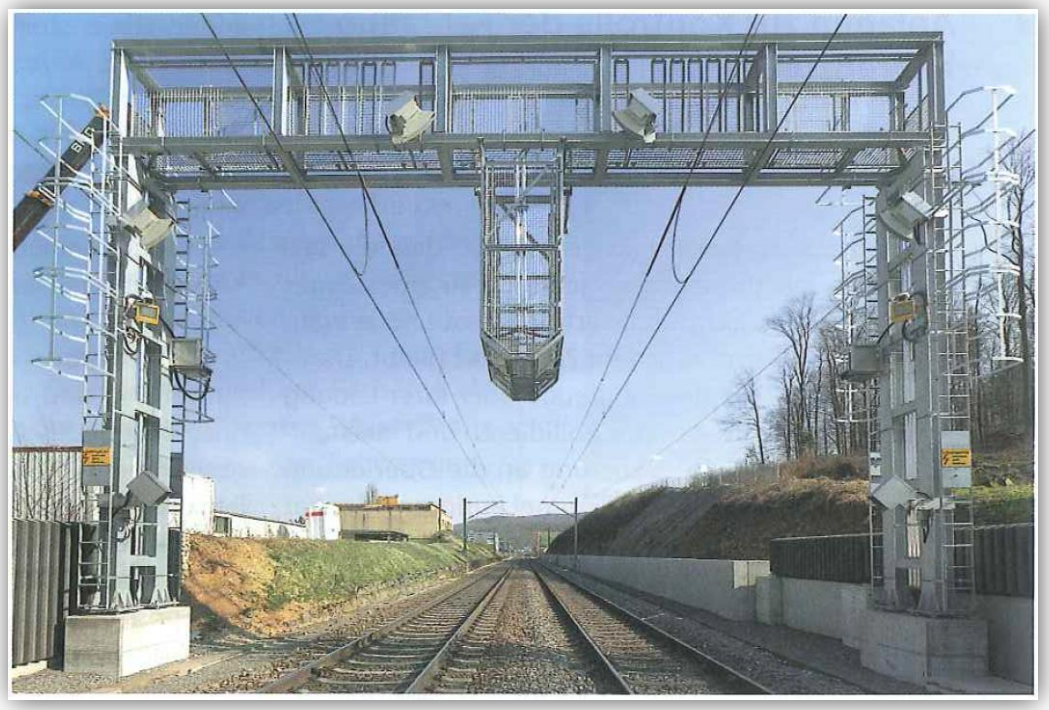
Main targets

• Accelerate the release of CT trains for the terminals

• Improve overall customer satisfaction with CT services (facilitate direct loading)

Automation in CT: some examples…

- **Automation of controls during railway journeys**



Gate controls in Switzerland (100 positions)

Main targets

• Control of train main characteristics (speed, weight…)

• Control of wagon main components (axel weight, total weight, load configuration)

• Control of loading units (labeling of dangerous goods)

Automation in CT: some examples…

- **Full automated handling facilities**

Rottedam Euromax - Hamburg CTA

Benefits

• an enormous increase in handling performance and improvements in terminal performance
•Reduction of wage costs
•Improved utilization of existing stack areas
•Increased productivity and concurrent cost reduction per move
• automatic guided vehicles and automatic stacking cranes

ISO Containers	**YES**
Other types	**NO**
Only in maritime environment	

Automation in pure road transport

- Autonomous road transport with platooning

Fully electrified road network with autonomous driving capabilities…

Is this not 'something' very similar to rail ? Better the original than the copy…

Automation in CT - conclusions

- Automation can be considered as a huge opportunity for improvement but also as a huge barrier for further rail freight development (Who will invest ? Who will really benefit? Only new equipment ? Retrofitting?)
- Automation needs interoperable standards (wagons, loading units…)
- A consistent concept integrating all elements must be developed and assessed by the CT stakeholders (automation of one element might cause the disruption of the entire chain)
- CT terminals are seen as the most promising component to facilitate the access to CT services
- Railway research and implementation: Shift2Rail system demonstrator (avoid single solutions for single entities)
- CT still in fierce competition with long-haul transport journeys

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THANK YOU

For your attention