Cluster Community System Tool

Clusters 2.0 Webinar

9th July 2020

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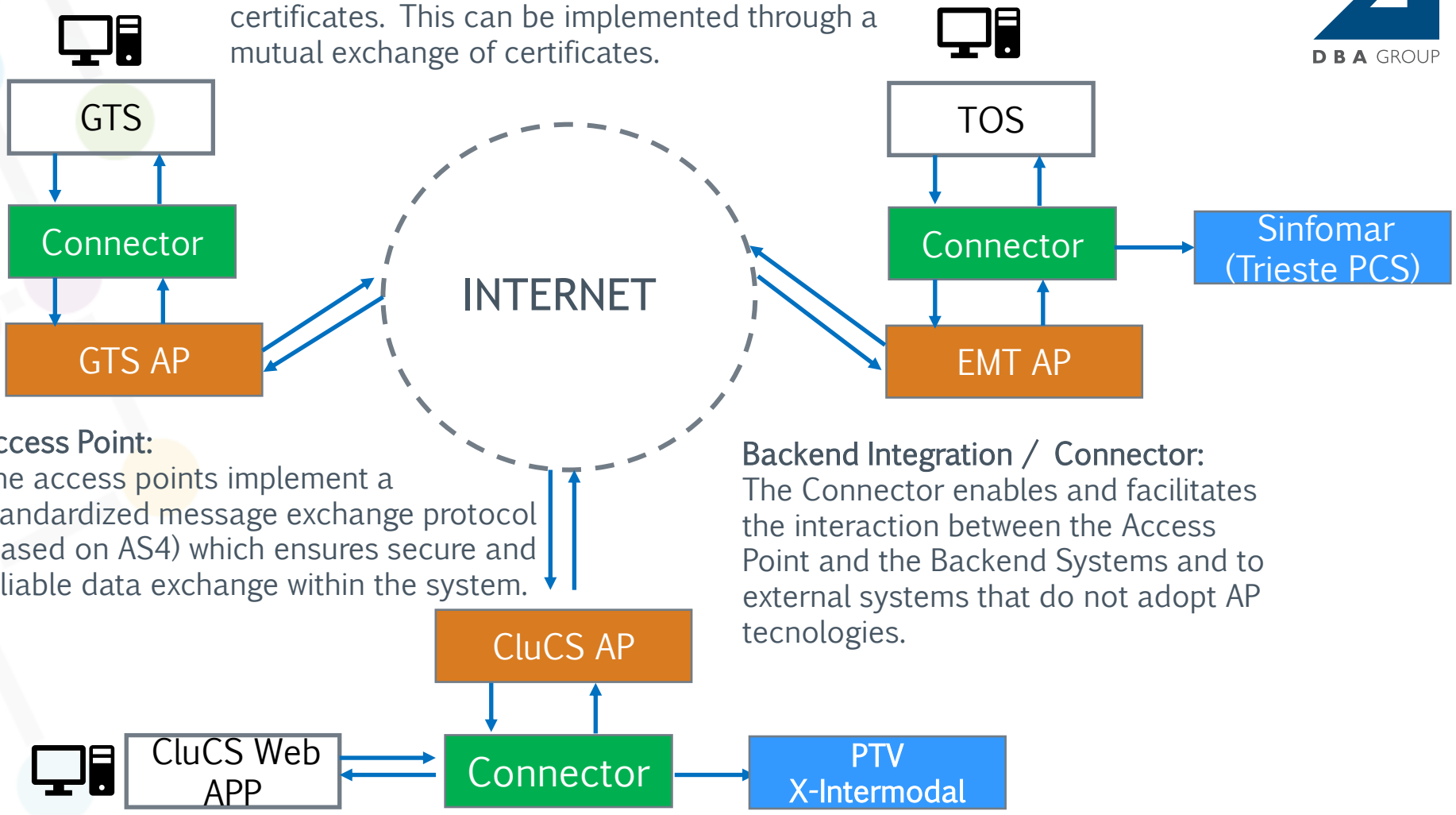
Agenda

- CluCS design
- CluCS interoperability
  - GTS and EMT: services management
  - Sinfomar (PCS of Trieste): Customs procedure management (CH30)
  - X-Intermodal: train time tables sharing
- DEMO
  - Interoperability with X-Intermodal (*live*)
  - EMT Service Booking (*off-line*)
  - Interoperability with Sinfomar (*off-line*)

Central node of CluCs - Pilot

CluCS communication infrastructure

Digital Certificates: Trust is established using digital certificates. This can be implemented through a mutual exchange of certificates.

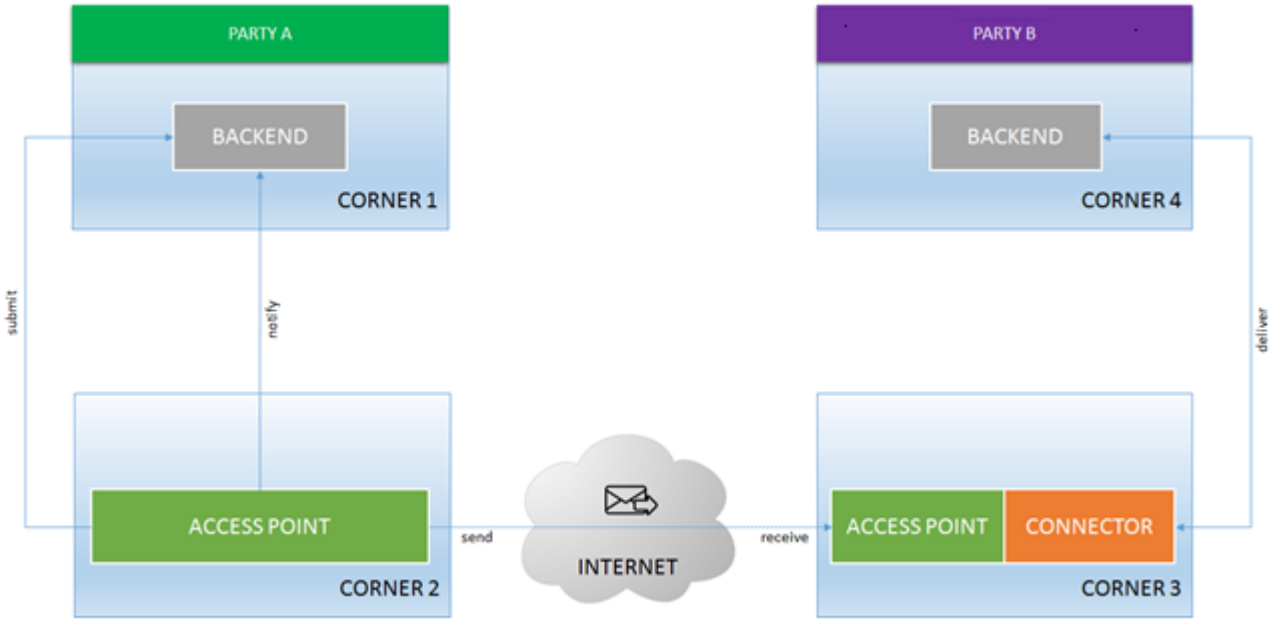


Access Point:
The access points implement a standardized message exchange protocol (based on AS4) which ensures secure and reliable data exchange within the system.

Backend Integration / Connector:
The Connector enables and facilitates the interaction between the Access Point and the Backend Systems and to external systems that do not adopt AP tecnologies.

Architectural design

As **Access Point** was adopted the **Domibus** software (**JMS implementation**). **Connectors** were implemented with Spring Framework Technology.



Architectural design layers of **Connectors** were divided into:

- **Data layer**, for storage and data access, was implemented using Hibernate as JPA implementation.
- **Business logic layer**, which enables the processing of data according to Domibus payload request or response to deliver. Well know *chain of responsibility pattern* was used to determine the connector's business logic service to be used according to Domibus payload request.
- **Service layers**, which enables the interaction between corner 4's backend and access point via connector, was developed using Spring Framework Technology as RESTFul Web Services.
- **Communication layers**, which enables the interaction with external systems (that do not adopt AP technology) was developed as WS consumer and between connector and access point, was developed using Spring Framework Technolgy as JMS consumer/producer client for Domibus access point.

GTS and EMT services management

GTS/EMT

- Backend connects to AP and sends services catalog to CluCS (GTS: only simulator // EMT: TOS integration)
- Services catalog is recieved by CluCS trough its APs and stored in the Cluster Central Node

Shippers

- Create booking request to CluCS (Central Node) via Web Interface providing details about cargo characteristics and dates

CluCS

- Recieves and elaborates booking request from shippers inserted via CluCS web interface
- Based on services catalogs route the request to proper LSP's AP.

GTS/EMT

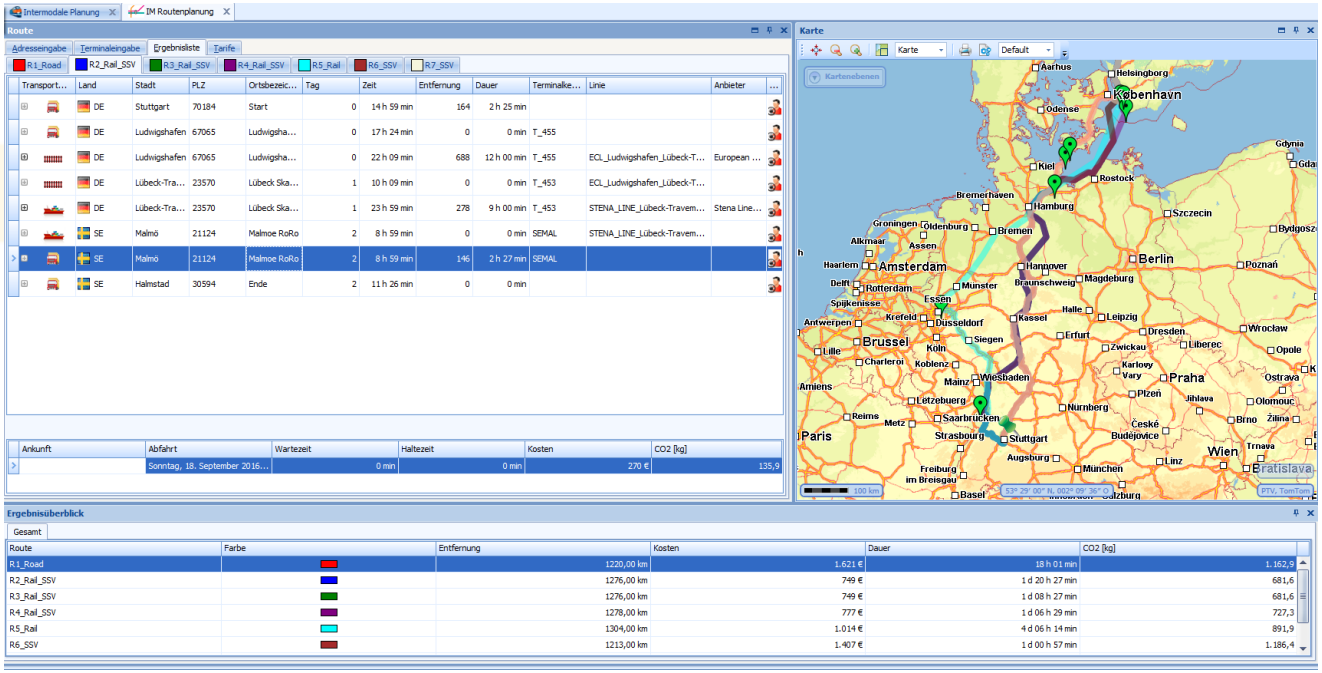
- Accept or reject intermodal service request in its IT system (GTS: only simulator // EMT: TOS integration)
- Sends confirmation of services to CluCS

CluCS

- Recieves booking confirmation from LSPs
- Informs all involved stakeholders of intermodal services confirmation

Collaboration of CluCS with PTV X-Intermodal

- X-Intermodal visualizes intermodal connections.
- X-Intermodal provides a better understanding on intermodal market.
- X-Intermodal provides a quick overview on intermodal lanes, which are often tough to find.
- X-Intermodal calculates and compares alternative routes (road, rail and barge).
- X-Intermodal calculates indicative costs and CO2 emissions.
- X-Intermodal synchronizes all data provided by intermodal operators.



EMT node: interoperability with Sinfomar

EMT

- Send to Sinfomar train composition (CH30)

Sinfomar

- Validate CH30
- Provide departure authorization to EMT terminal

EMT

- Recieves CH30 authorization
- Record the exit of train from terminal

EMT node: Interoperability with Sinfomar

Sinfomar .era Software marittimo

N.Pratica	Data	Traccia	Tipo	Nome conv.	Naz.	Origine / Destinazione	A/P	Terminal	Varco	IG	Stato	Vag. tot.	Vag. pieni	Nr. cntr	Nr. mezzi	Massa netta	Dichiarante
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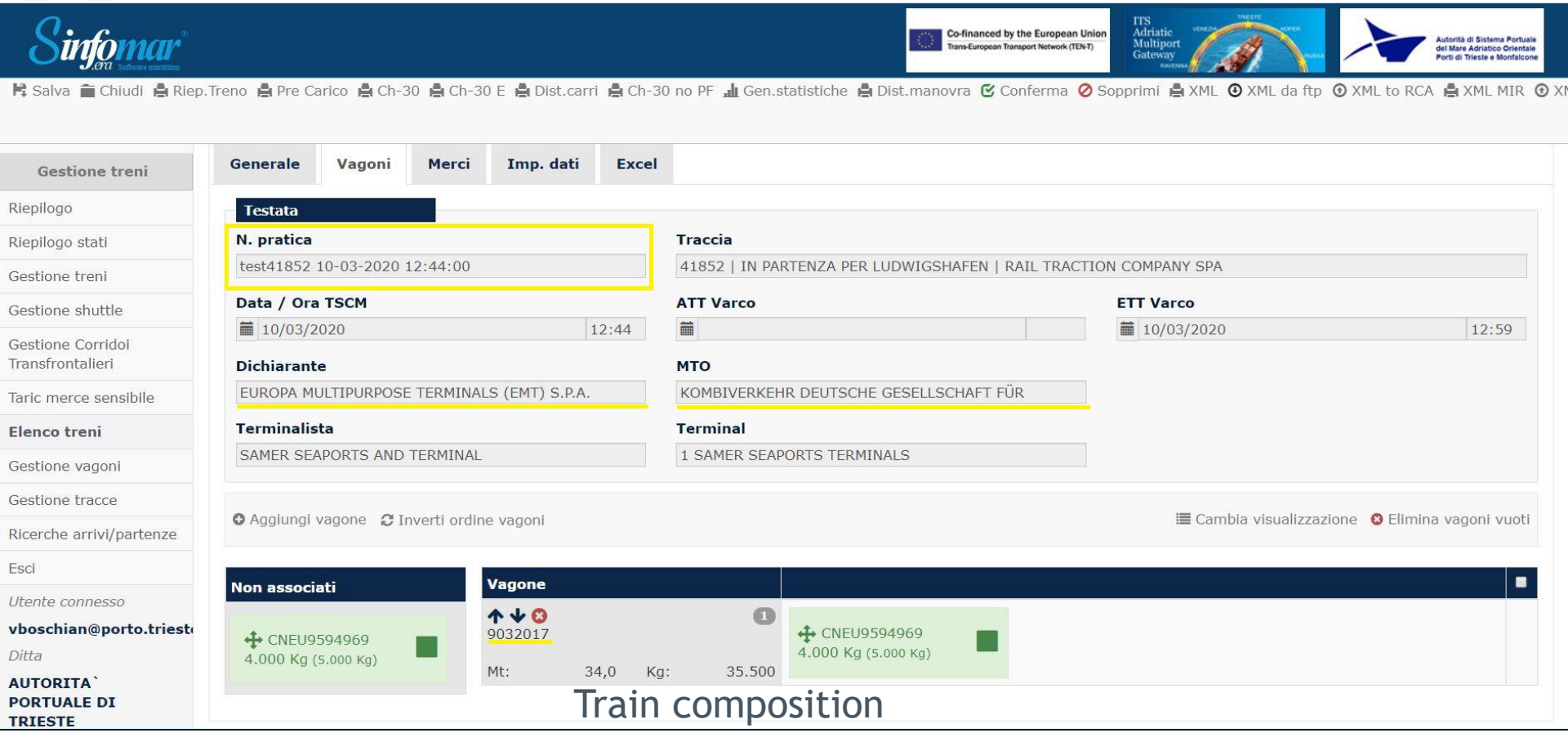
TRM2.0127P	10/03/2020	41878		BETTEMBOURG2		BETTEMBOURG		SAMER SEAPORTS TERMINALS	10/03/2020 10:30			16	14	0	27	358.208	SAMER
TRS-BUD	10/03/2020	42180		BUDAPEST		BUDAPEST		TRIESTE MARINE TERMINAL	09/03/2020 20:15			20	20	52	0	753.918	TO DELTA

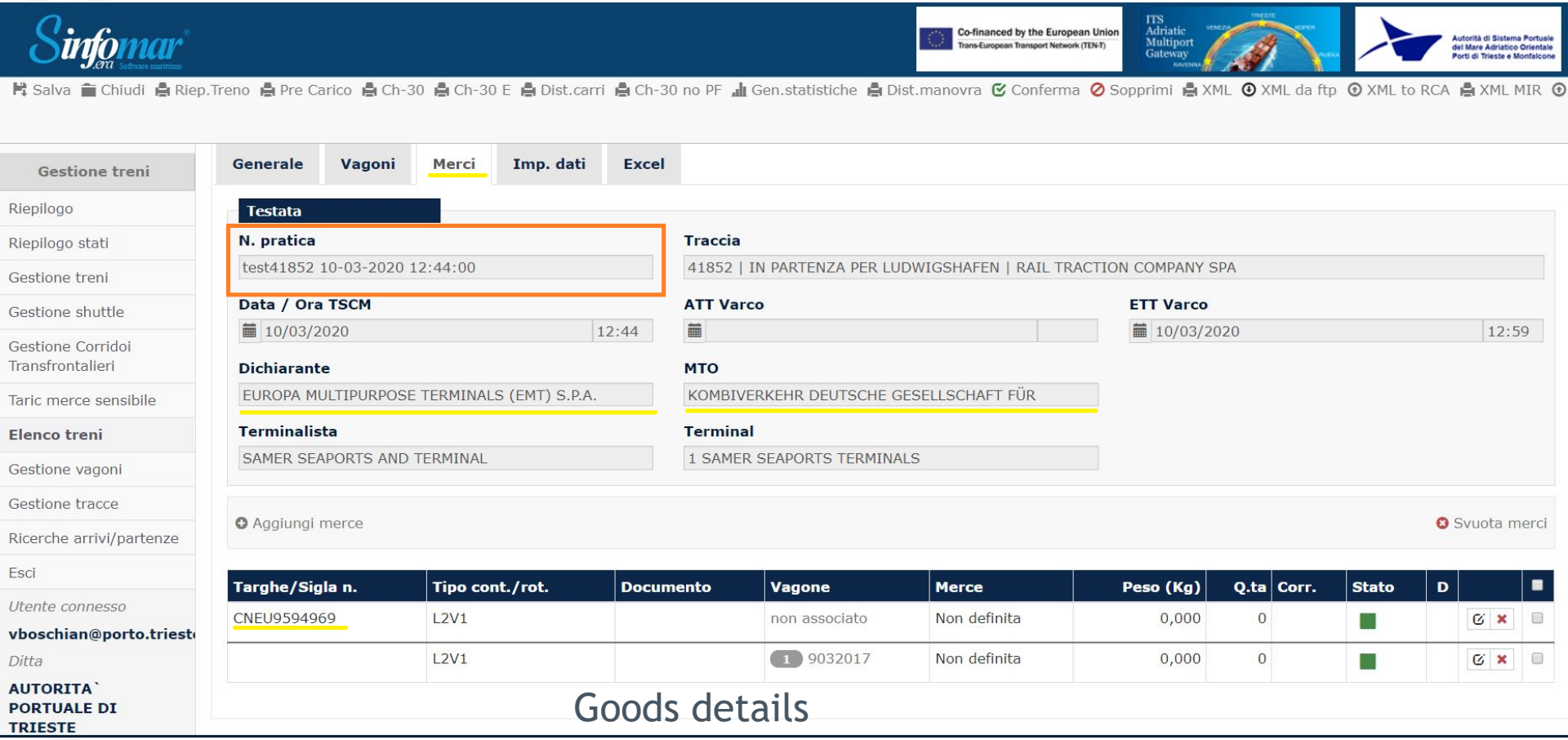
List of departing/arriving trains

EMT node: Interoperability with Sinfomar



Train composition

EMT node: Interoperability with Sinfomar



Goods details

DEMO