

# **MOBILITAT SOSTENIBLE**

## **EL TRANSPORT FERROVIARI**

### **La xarxa trans-europea de transport de mercaderies**

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**Barcelona, 30 d'abril de 2019**

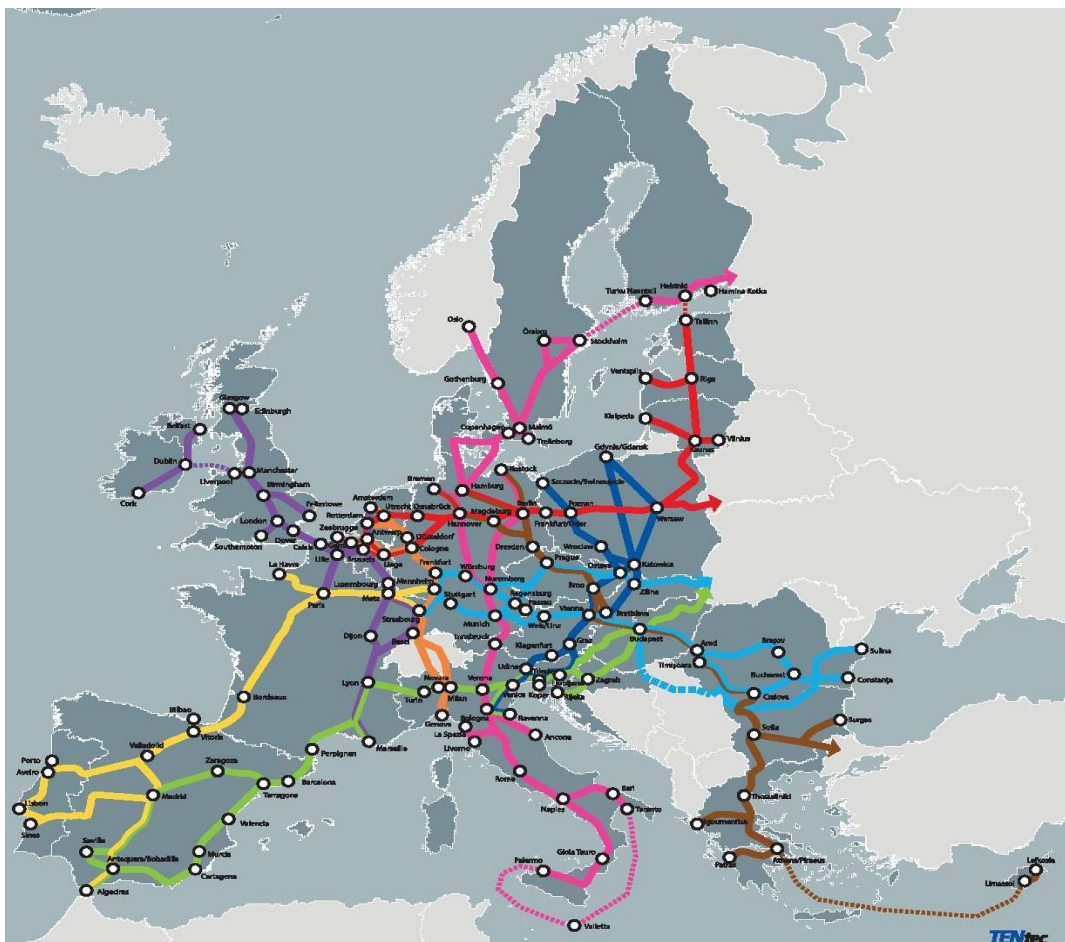


**Promotion du Grand Axe Ferroviaire de marchandises**  
**Scandinavie-Rhin-Rhône-Méditerranée Occidentale A.S.B.L**

**Enginyers**  
**Industrials de Catalunya**

# TRANS-EUROPEAN CORRIDORS

## EU CORE NETWORK AND MAIN CORRIDORS



SOURCE: EUROPEAN COMMISSION

## REAL FACTS (I)

### EU level

- No increase in railway freight share in land transportation in the last 15 years
- Huge Railway Core Network with nearly 80,000 km
- Continuous delays in the required investments in main lines of the Core Network
- Impossibility to achieve “White Paper” targets by 2030
- No significant reduction in railway freight transportation cost, transit times (door to door) or in operational unreliability
- Huge productivity boost forecasted in road transportation system in next decade

## REAL FACTS (II)

### Eurasian level

- Small participation of the railway in the Trans-Eurasian Multimodal Transportation System (approx. 1% of the transported goods in value)
- No significant reduction in transportation costs.
- Transborder difficulties / bureaucracy
- Excessive transit times
- Unbalanced flows Westbound - Eastbound

# FERRMED REQUIREMENTS/STANDARDS OF REFERENCE

## (SIMPLIFIED VERSION)

- **EU Reticular and polycentric selective network with great socio-economic and intermodal impact, with two parallel rail lines** (double track each) in each main corridor :
  - one for conventional trains (freight and passengers).
  - another available for passengers and light freight (high speed trains).
- **Loading gauge UIC-C, gauge of the tracks UIC (1435mm in EU Core Network), ERTMS.** Electrified lines. **Maximum grade 12‰. Axle load: 22.5 - 25 tonnes.** Huge Cities by-passes.
- **Trains length 1500 m. and 3600 – 5000 tonnes.**
- **New concepts for freight locomotives and wagons/"E-trains".**
- **Availability of a network of versatile, efficient and flexible intermodal terminals.**
- **Unified labour, management and operational systems, coordinated at EU/Eurasian level**
- **Free Competition, giving all companies access to tracks in non-discriminatory way**
- **Unified coordination at EU level of homologation processes, common standards implementation** and economic funds allocation in Railway Core Network.





# FERRMED GLOBAL STUDY

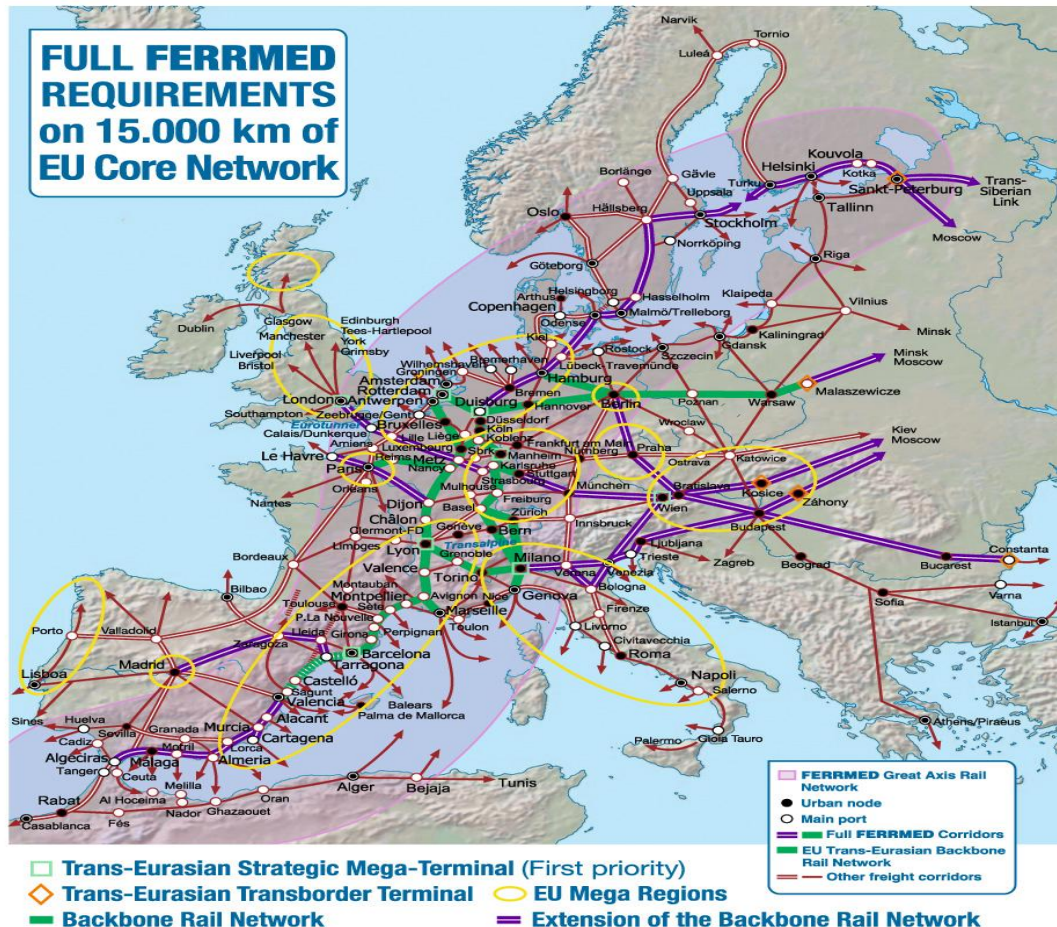
**FERRMED, with the economic aid of the EC, carried out a high-level Global Study of the Western European railway system.**

**Two main conclusions arose from this Study:**

- **Confirmation that the gradual achievement of the “FERRMED Requirements/Standards of Reference” is the only way to reverse the continuous decline of rail freight within the land transportation system**
- **Implementation of all “FERRMED Requirements/Standards of Reference” in the main trunks of the FERRMED Great Railway Axis (EULER Vector) in Western Europe would generate an Economic Internal Rate of Return (EIRR) of 11.09%**



# HOW TO PROCEED IN EU: "FULL FERRMED CORRIDORS IN THE EU CORE NETWORK"



First step:  
 Trans-Eurasian Backbone Rail Network  
 (about 6,000 Km)  
 (approx. 30% of Core Network traffic)

Second step:  
 EU Main Trans-Eurasian Corridors (to reach about 15,000 Km)  
 (approx. 60% of Core Network)

(EU Core Network about 80.000 km)

**Key Target:** Land transport system: >300 kms on rail or barge (2030 = 30% ÷ 35%) in "Full FERRMED Corridors".





# TRANS-EURASIAN TRAINS CHARACTERISTICS IN EU

Trans-Eurasian trains in EU have to take into account FERRMED Standards about length and gross weight.

## ***FERRMED Trains Top Characteristics***

Length	1,500 m
Track gauge	1,435 mm
Loading gauge	UIC C
Gross Weight = Load	3,600 t – 5,000 t
Number of motorized axles	12 axles
Number of locomotives	More than one: 2 Co-Co or 3 Bo-Bo
Starting tractive effort of the train	600 kN – 800 kN
Power of the train	7,000 kW – 10,000 kW

This kind of trains can increase the payload between 75 and 100%, reduce operating costs over 25% and boost line capacity more than 50%.



# LONG AND HEAVY TRAINS IN BARCELONA-LYON MEGA-REGION (MARATHON PROJECT)



Freight trains with two locomotives and 72 wagons, 1,524 metres long and weighing 4,020 tonnes. Trial conducted in France between the towns of Sibelin and Nîmes in the first quarter of 2014. Project Marathon.

# XXVI COORDINATING COUNCIL ON TRANS-SIBERIAN TRANSPORTATION PLENARY MEETING SOCHI (RUSSIAN FEDERATION)





## LOADING GAUGE IN TRANS-EURASIAN MAIN ROUTES

Adaptation of the existing lines to facilitate the “Unaccompanied Combined Transport” (Semi-trailers) minimum GB1 loading gauge (preferable P-400/GC or even larger)



**“No more trucks in distances over 1.000 kms”**

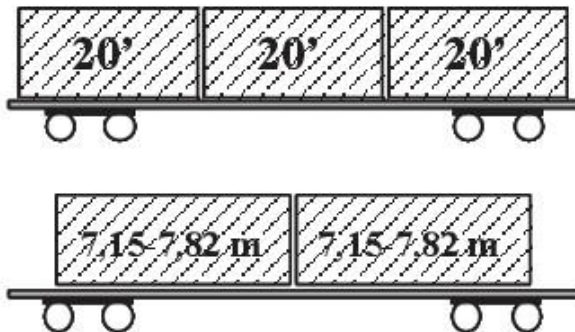
# FERRMED FREIGHT WAGON CONCEPT

## RECOMMENDED FREIGHT WAGON CHARACTERISTICS (for Trans-Eurasian high value added products transportation)

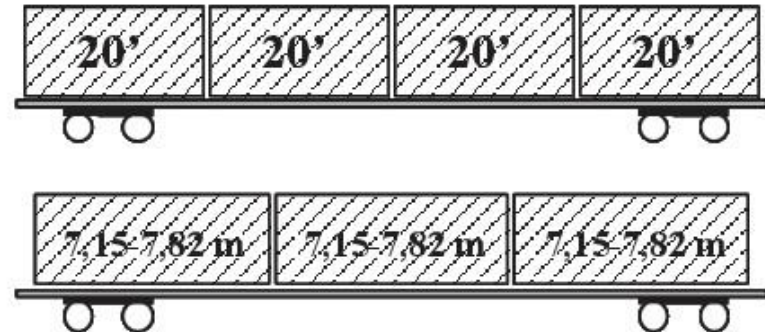
(According to FERRMED Wagon Concept)

- ❖ Weight reduction through central beam design.
- ❖ Automatic central couplings.
- ❖ Compact and “composite” brakes.
- ❖ Electric onboard power supply and IT equipment.
- ❖ Loading length able for 4 TEUS (~25 m).

Today – loading length ca. 19 m



Future – loading length ca. 25 m



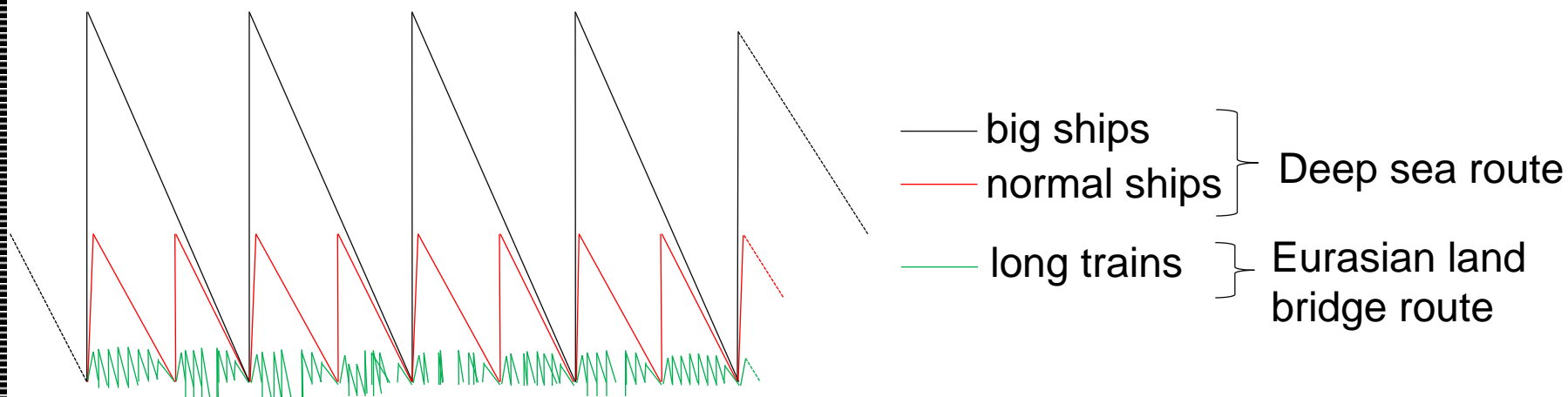


# RAILWAY VERSUS VESSEL IN "SILK ROAD"

## ❖ STOCK MOVEMENTS IN INTERMODAL TERMINALS

### Stocks evolution

### Transportation system



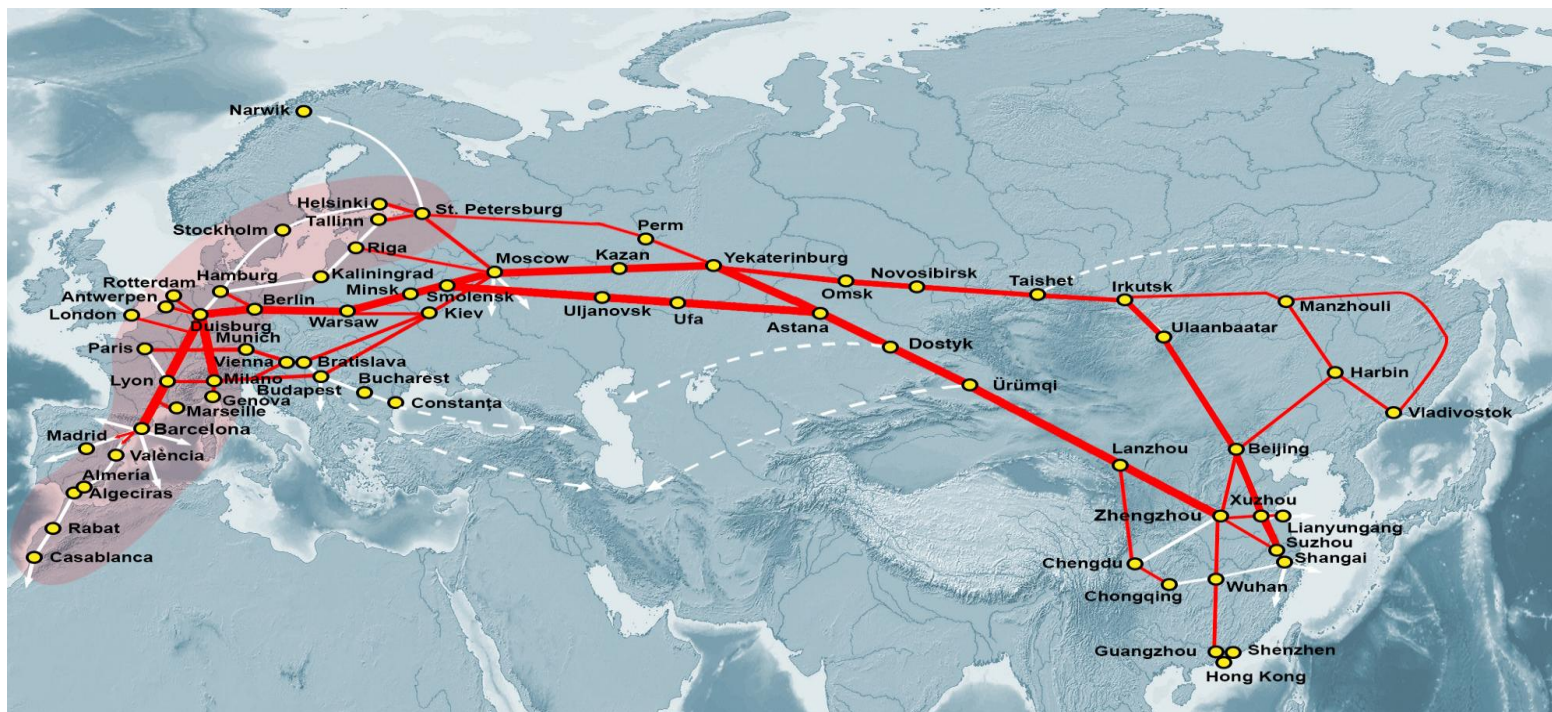
## ❖ "PIPELINE" STOCKS

Vessel → 22 ÷ 32 days

Railway → 7 ÷ 10 days (forecast)

# HOW TO PROCEED AT EURASIAN LEVEL (1)

Select the most suitable corridors and strategic intermodal terminals in Eurasian Railway System in China, Russian Federation and other CIS countries, duly linked to EU Trans-Eurasian Backbone Rail Network



## HOW TO PROCEED AT EURASIAN LEVEL (2)

# FERRMED MULTISECTORAL WORKING GROUPS (FMWGs)

### General objectives

#### ❖ In the European Union

To push the business oriented development of the Trans-European Railway Network, particularly for freight: bottlenecks solving and FERRMED Standards implementation in most important Corridors, considering shippers priorities.

#### ❖ At Eurasian level

To interconnect properly the China, Russian Federation and other CIS countries with EU network, considering the most suitable routes, with longer and “intelligent trains”, shorter transit times and efficient mega-terminals in great logistics hubs

Key issue: **“Making today’s freight system work for business in a selective network”**

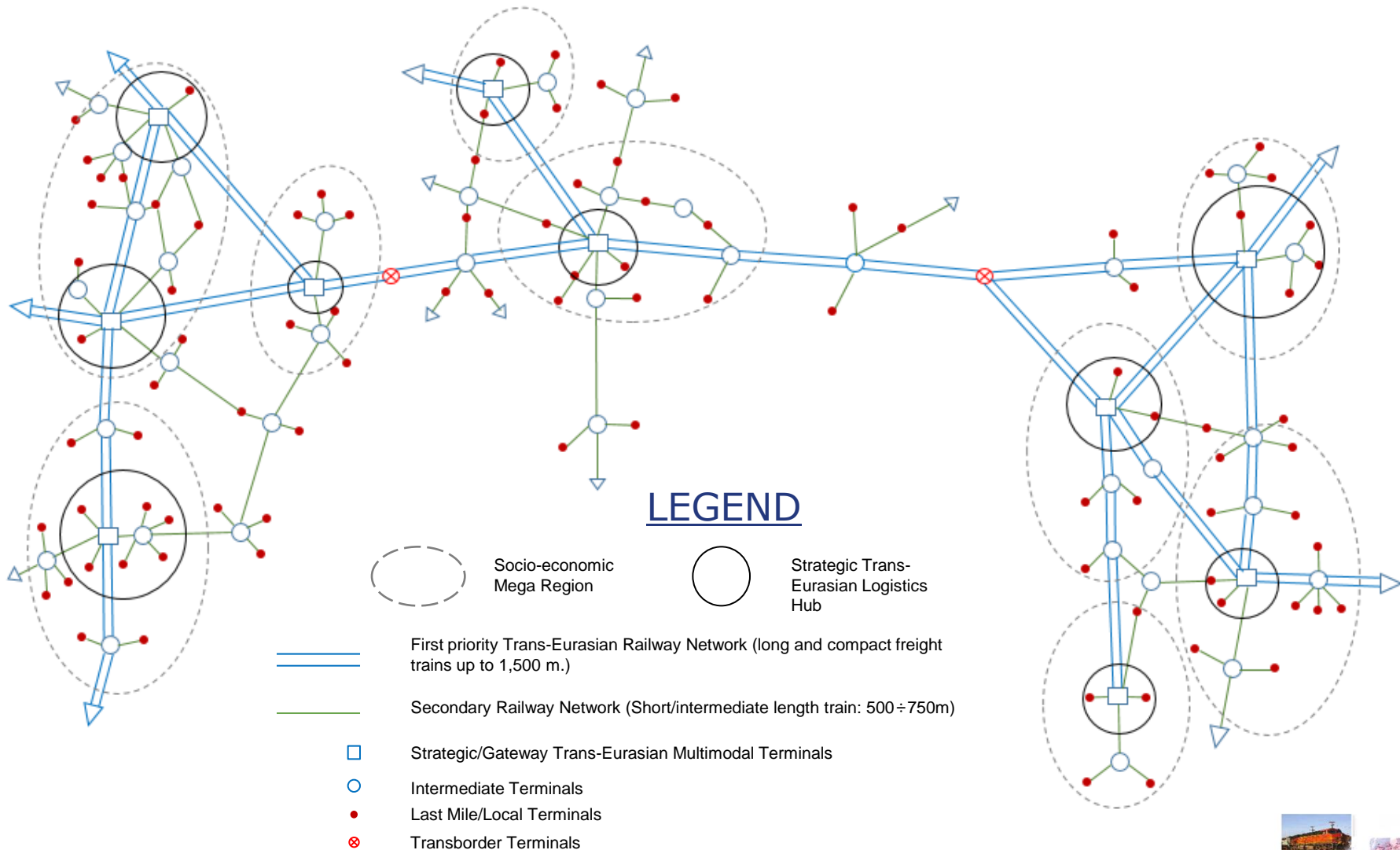


## HOW TO PROCEED AT EURASIAN LEVEL (3)

- ❖ Take advantage of FERRMED MULTISECTORAL WORKING GROUPS (FMWGs) on: Infrastructure, Operations and Rolling Stock, duly interrelated with the UIC, CCTT, OSJD, CER, UIRR, UNECE,... Working Groups
- ❖ The FMWGs are doing agreements with the aforementioned Associations, and will concentrate, particularly in EU, their efforts in the following items:
  - **Train length** (from 740 m to 1,500 m)
  - **Intermodal terminals efficiency and versatility**
  - **Loading gauge enlargement**
  - **Rolling stock improvements** (new freight wagon concept)/**E-trains**
  - **Resolution of main bottlenecks related to infrastructure and operations** (including track gauge compatibility)
  - **Creation and consolidation of efficient shuttle train routes between strategic/Gateway Trans-Eurasian Terminals**
- ❖ The FMWGs are open to all interested entities (companies, associations, universities,...)



# TRANS-EURASIAN RAILWAY NETWORK CONCEPT



## MAIN EXPECTED RESULTS

- ❖ Significant increase in Railway land transportation share.
- ❖ Multimodal flows optimization.
- ❖ Drastic lead time reduction (over 50%) and punctuality improvement.
- ❖ Transportation cost reduction: over 25%.
- ❖ Freight trains able to carry 224 TEUs.
- ❖ Lines capacity increase: over 50%.
- ❖ Continuous full “on line” information.
- ❖ Payload increase of 2 Tonnes/wagon.
- ❖ Substantial reduction of noise and vibration.
- ❖ Strong decrease in Greenhouse Gas (GHG) emissions.
- ❖ Socio-economic Internal Rate of Return of ~11%.



# LAUNCHING OF THE EURASIAN CONNECTIVITY AND INDUSTRIAL COOPERATION FORUM (I)

The Eurasian Connectivity and Industrial Cooperation Forum builds on the principles of:

- The 20<sup>th</sup> EU-China Summit in Beijing on July 2018 and the corresponding Summits Join Statement.
- China's Belt and Road initiative and EU policy on sustainable connectivity between Europe and Asia
- Russian Federation and CIS countries initiatives regarding international cooperation to improve the efficiency of Trans-Eurasian multimodal freight, particularly for rail traffic

**Next Eurasian Connectivity and Industrial Cooperation Forum will be held in Brussels on November 6<sup>TH</sup> 2019.**

# LAUNCHING OF THE EURASIAN CONNECTIVITY AND INDUSTRIAL COOPERATION FORUM (II)

**“From high capacity intelligent trains & terminals, digitalization, data sharing, blockchain and smart intercities links to 5G and Circular Economy in rail freight transport”**

The main topics are:

- To improve the efficiency of the Eurasian trade and manufacturing processes through a high performance “pipeline” Trans-Eurasian Railway Land Bridge.
- To push ahead a fully synchronized manufacturing system between China and Europe, with “just-in-time” delivering and minimal transit and “on land” stocks.
- To impel the “Circular Economy” at Eurasian level
- To display the FMWGs Action Plans and Achievements



# FERRMED, ASBL



**THANK YOU  
VERY MUCH FOR  
YOUR  
ATTENTION**

**VIELEN DANK FÜR  
IHRE  
AUFMERKSAMKEIT**

**Большое  
спасибо за  
внимание**



**TRANS-EURASIAN MAIN ROUTES**

