FERRMED CONFERENCE

Second Eurasian Connectivity and Industrial Cooperation Forum

ENHANCEMENT OF THE TRANS-EUROPEAN AND TRANS-EURASIAN RAIL FREIGHT SYSTEM: A SOCIO-ECONOMIC ORIENTED APPROACH

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

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 or operational unreliability

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), 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.**
- **Availability of a network of versatile, efficient and flexible intermodal terminals.**
- Unified labour, management and operational systems, coordinated at EU 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%

FERRMED GLOBAL STUDY IN WESTERN EUROPE

FERRMED GREAT AXIS RAIL NETWORK, backbone of EULER Vector

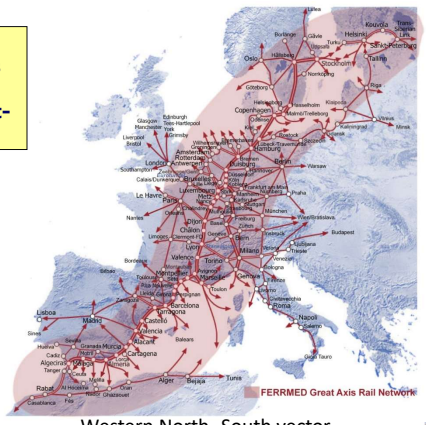
EULER = European Union Locomotive Economic Regions

FERRMED GREAT AXIS

The rail freight network of the FERRMED Great Axis interconnects the most important sea and inland harbour clusters; and the main East-West axes of the EU.

The FERRMED Great Axis has a direct and close impact over **250 million Europeans** (54% of the EU-28 population and 66% of the GDP).
In addition, the axis :

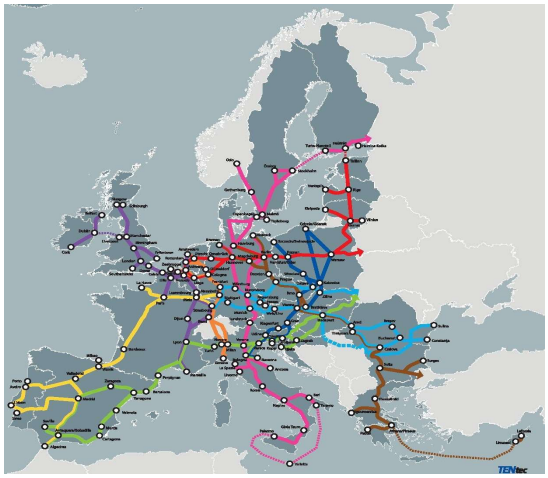
- has a close influence over **70 million inhabitants in North Africa.**
- **links with** the western end of **Trans-Siberian Railway** in St. Petersburg and Finland



Western North- South vector

TRANS-EUROPEAN CORRIDORS

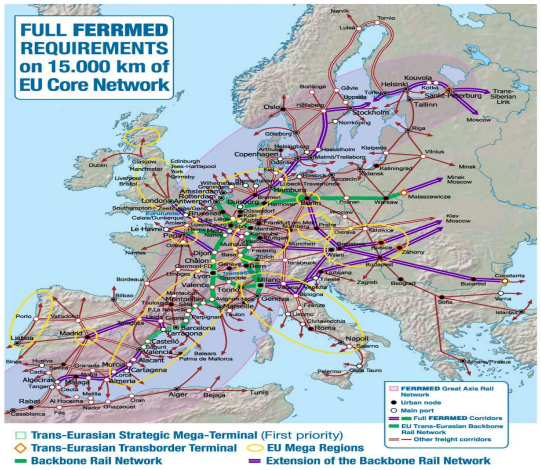
EU CORE NETWORK AND MAIN CORRIDORS



SOURCE: EUROPEAN COMISSION

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)

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 by 25% and boost line capacity more than 50%.

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 GC or even larger)

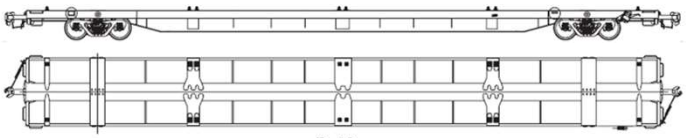
LONG AND HEAVY TRAINS IN BARCELONA-LYON MEGA-REGION (MARATHON PROJECT)

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)

FERRMED FREIGHT WAGON CONCEPT

MAIN CHARACTERISTICS



Top View

Platform concept (several wagon types can be demanded/detachable superstructures

Three basic designs:

Design A1: Long wagon → mainly for intermodal/volume-cargo (25 m of loading length)
Design A2: Short wagon → for bulk and break-bulk commodities
Design B: Flat wagon for trailer Transport

Key parameters: Axle load 22,5 ÷ 25 tons; Loading gauge: UIC-GC; Speed: 100÷ 120 km/h.; Central beam; Automatic central couplers; Electric power Supply/ IT equipment; compact brakes

Main advantages:

A1: More capacity when loaded with containers. Better adapted to 40' containers.
50% more capacity when loaded with C-Swap bodies
B: handles 100% of European semi-trailer fleet

NEW OPPORTUNITIES FOR TRANS-EURASIAN RAIL TRANSPORTATION

Transportation mode share China – EU in value: Vessel 95%, Plane 4%, Railway 1%.

Approximately **40% of total cargo turnover** between China and Europe is of high value added products. New opportunities exist for rail to win market share from air and sea transport, through an enhanced Eurasian Land Bridge in the frame of CCTT and OBOR initiatives.

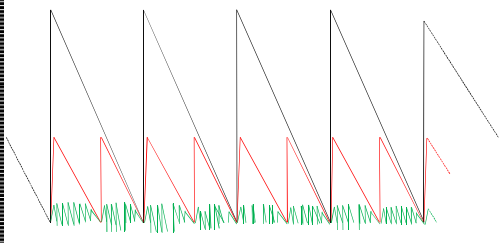
Acting on these opportunities it is possible:

- 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" delivery and minimal transit and "on land" stocks

RAILWAY VERSUS VESSEL IN "SILK ROAD"

❖ **STOCK MOVEMENTS IN INTERMODAL TERMINALS**

Stocks evolution



Transportation system

- big ships
- normal ships
  } Deep sea route
- long trains
  } Eurasian land bridge route

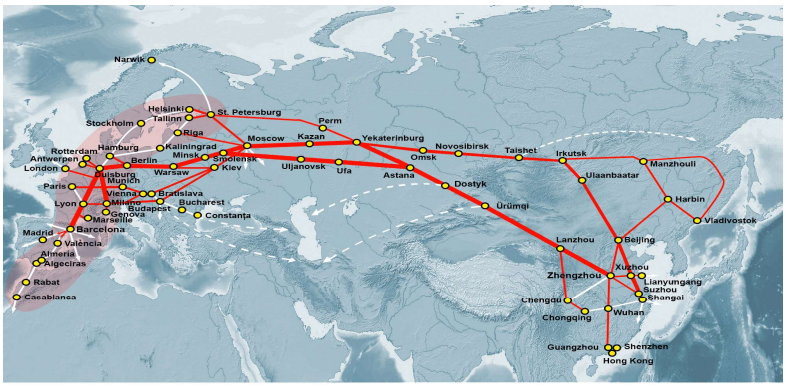
❖ **"PIPELINE" STOCKS**

Vessel → 22 ÷ 32 days

Railway → 7 ÷ 10 days (forecast)

HOW TO PROCEED AT EURASIAN LEVEL (1)

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



TRANS-EURASIAN MAIN ROUTES

HOW TO PROCEED AT EURASIAN LEVEL (2)

❖ 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 will make agreements with the aforementioned Associations, and will concentrate 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)
- **Track gauge compatibility and resolution of main bottlenecks**
- **Creation and consolidation of efficient train routes between strategic Trans-Eurasian Terminals**

❖ The FMWGs are open to all interested entities (companies, associations, universities,…)

RECOMMENDED CONDITIONS FOR LOCATION OF TRANS-EURASIAN STRATEGIC MEGA-TERMINALS

➢ **To be located in a significant socio-economic region and in a Trans-Eurasian main route**

➢ **To be established in an important logistic and industrial hub with comprehensive and diversified economic activity sectors** like: aeronautical, agrifood, automotive, ceramics, construction auxiliary industry, electronics, iron and steel, logistics services, metallurgical, mining, petrochemical, pharmaceutical, railway rolling stock manufacturing, textile and clothing, etc, etc (to reduce logistics costs and better "both senses flow" balancing)

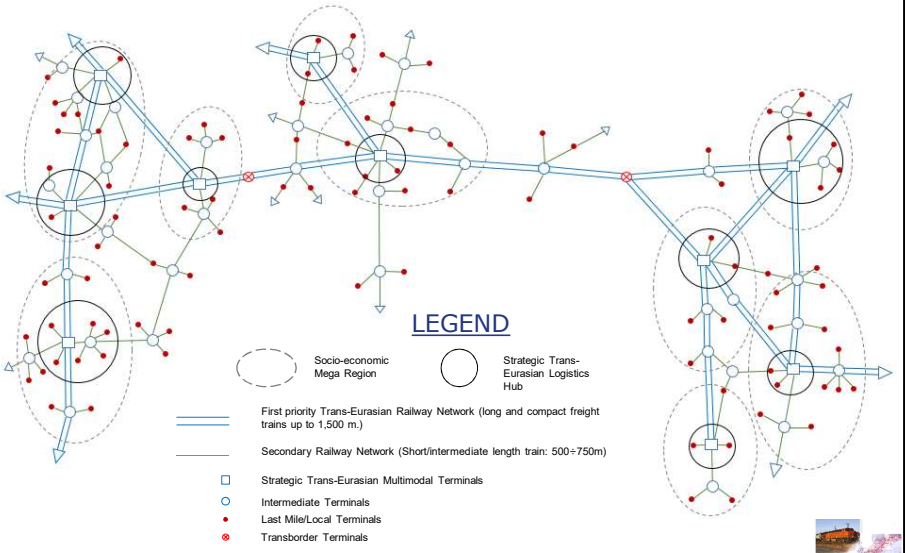
➢ **To have a good communication system: railways, motorways, sea or inland port and airport with easy international links**

➢ **Site accessible to efficient complementary facilities like: universities and research centres, business schools, shopping districts, etc**

➢ **"Free zone" declaration possibility and "freight Village" facilities**

➢ **Reasonable warehouses and land prices**

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%.

STRATEGIC TRANS-EURASIAN LOGISTICS HUBS PLATFORM (STRANSS Platform)

The members of the STRANSS Platform could be the main cities of the urban agglomerations classified as “Strategic Trans-Eurasian Logistics Hubs” due to their respective GDP contributions, volume of production and trade, and corresponding major logistics facilities.

The main objectives of the STRANSS Platform are:

- To enhance the multimodal Trans-Eurasian transport system based on an efficient railway.
- To promote smart and environmentally friendly intercity logistics.
- To promote trade and rail transport routes between the involved Strategic Trans-Eurasian Logistics Hubs, with balancing of flows.
- To foster the organization of forums, exhibitions, seminars and conferences regarding the Belt and Road Initiative –including FMWGs meetings- in order to promote research, development, innovation and success stories in the transport system
- To promote collaboration between the universities, business schools, research centers, chambers of commerce and similar actions of the involved Strategic Trans-Eurasian Logistics Hubs.

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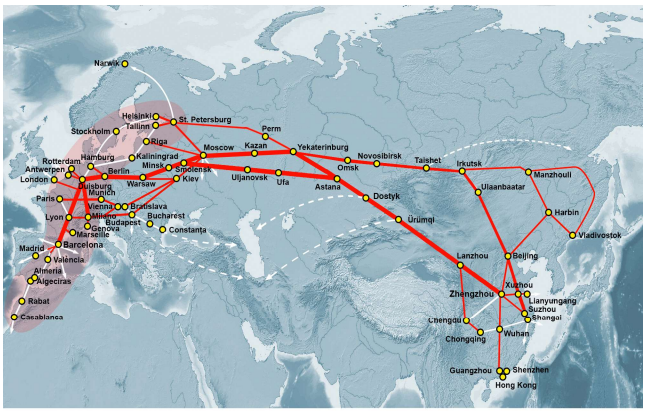

TRANS-EURASIAN MAIN ROUTES

THANK YOU VERY MUCH FOR YOUR ATTENTION