



“Il n’est plus question de vaines paroles, mais d’un acte, d’un acte hardi, d’un acte constructif”

“L’Europe ne se fera d’un coup, ni dans une construction d’ensemble: elle se fera par des réalisations concrètes, créant d’abord une solidarité de fait”

**La déclaration du 9 mai 1950
Robert Schuman**

FERRMED DECLARATION concerning the “EU FULL FERRMED RAIL FREIGHT CORRIDORS”

**THE DEVELOPMENT OF FULL FERRMED CORRIDORS
- the most business oriented core network lines-,
THE WAY TO EU RAIL FREIGHT COMPETITIVENESS**

Long and heavy trains to enhance the EURASIAN Trade and Production

**European Parliament
Brussels, March 6th 2013**



FERRMED

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Scandinavie-Rhin-Rhône-Méditerranée Occidentale A.S.B.L**

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FERRMED DECLARATION concerning the “EU FULL FERRMED RAIL FREIGHT CORRIDORS”

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FERRMED DECLARATION concerning the “EU FULL FERRMED RAIL FREIGHT CORRIDORS”

A.- FOREWORD

1.- FERRMED OBJECTIVES

FERRMED is a non-profit Multi-sectorial Association that was founded by the private sector in Brussels on the 5th of August 2004 in order to improve rail freight transportation and industrial competitiveness in Europe.

FERRMED is promoting the implementation of common technical railway standards, the so-called "*FERRMED Standards*", the improvement of the connections of Ports and Airports with their respective hinterlands, the “Full FERRMED Corridors” achievement (for freight, considering only the most important part of the EU Railway Core Network) and the conception of a Great Rail Freight Axis Scandinavia-Rhine-Rhone-Western Mediterranean.

B.- FERRMED CONSIDERATIONS

2.- FERRMED STANDARDS FOR RAIL FREIGHT TRANSPORTATION IN EU CORE NETWORK

This is a key in order to get the competitiveness of the Trans-European Core Network.

Interoperability is a main point, but we have to achieve this interoperability improving, as well, the rail freight capacity and the profitability of the network.

In fact, as the Global Study entrusted to a prestigious European Consortium of consultancy companies demonstrates, the application of FERRMED Standards is the only way to reverse the decreasing share of Railway in EU land transportation and to increase its competitiveness.

For all these reasons, **we strongly recommend the gradual implementation of FERRMED Standards in the EU Railway Core Network**, with lead times clearly determined and with full commitment by the Member States, considering the following key items:

- a. Unified coordination at EU level of the economic funds allocation for Railway Core Network development and common standards implementation.
- b. Reticular and polycentric Core Network with great socio-economic and intermodal impact, with two parallel rail lines (double track each) in each corridor. One for high speed trains (basically for passengers) and another for conventional trains (for freight and passengers at same priority rate).
- c. Electrified lines (preferably 25,000 volts).



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- d. Width of the track UIC (1,435 mm).
- e. Loading Gauge UIC – C.
- f. Axle load: 22.5 ÷ 25 tonnes.
- g. Possibility to have freight length trains reaching 1,500 meters and 3,600 to 5,000 tonnes. Usable length of sidings and terminals for 1,500 meters length trains.
- h. Maximum slope: 12 ‰ (exceptionally 15 ‰ in short distances of no more than some hundred meters).
- i. Huge cities by-passes for freight.
- j. Availability of a network of intermodal polyvalent and flexible terminals with high level of performance.
- k. ERTMS System (at least level 2) with both ways control in each track.
- l. Traffic schedules available for freight transportation 24 hours a day, and 7 days a week.
- m. Free competition, giving all companies access to tracks in a non-discriminatory way.
- n. Harmonization and simplification of the homologation processes, administrative formalities and social legislation.
- o. Unified management, monitoring and tracking (through ITS) systems by Mega-Regions and main corridors coordinated at EU level, including pre-arranged train paths and reserve capacity.
- p. Competitive management criteria based on R+D+4i Principles (Research, Development, innovation, identity, impact and infrastructure) in the global chain of added value.
- q. Favourable and homogeneous fees for the use of infrastructures.
- r. Reduction of the environmental impact of the freight transportation system (particularly noise, vibration and CO₂ emissions) as a result of the gradual retrofitting/replacement of the old railway rolling stock, infrastructural solutions when needed and an increase of the long distance rail share on land traffic of up to 35%.
- s. Freight locomotive and wagon concepts adapted to FERRMED Technical Standards



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FERRMED Global Study has analysed the **impact of the implementation of these Standards in all FERRMED Great Axis Rail Network (“Red Banana”)**, including bottlenecks solving, required by-passes, new lines, terminals, rolling stock adaptation, adjustment to international width of the conventional lines’ tracks in the Spanish Mediterranean Corridor, etc... **In spite of the exhaustive investments considered, the conclusion shows a very good socio-economic result with an Economic Internal Rate of Return of 11.1%, with the possibility to move from 266 billion tonne-km per year transported in 2005 to 524 billion tonne-km per year by 2025, and with more than 145 million tonnes reduction in CO₂ emissions from 2016 to 2045.**

3.- TRANS-EUROPEAN RAILWAY CORE NETWORK DEFINITION

FERRMED is pleased by the fact that the EU is moving towards an establishment of a reticular and polycentric Rail Network as FERRMED has been requesting since its foundation. FERRMED also states its satisfaction by the fact that the Guidelines established for the Railway Core Network by the EC include many of the FERRMED standards proposals.

However, in opinion of FERRMED the proposed Core Network is excessive in terms of number of corridors. Therefore should be distinguish two kind of corridors as is stated in the Declaration made on the occasion of the FERRMED TRANS-EUROPEAN CLUSTER CONFERENCE held on September 21st 2011 in Brussels. That is:

- Corridors of the maximum strategic impact, critical mass and that facilitate the links with neighbouring countries and to the global market (Main Corridor).
- Corridors with regular or medium strategic impact and critical mass (Basic Corridor) with a function of feeder axis to the Main Corridors.

Main Corridors require, at least, two parallel rail lines (not necessarily to be side by side) with double track each.

FERRMED agrees with the 10 Main Corridors proposed by the EC, but we strongly believe in the importance of the inclusion of the branches Bremen-Duisburg-Köln-Koblenz-Luxemburg and London-Lille-Metz in corridor number 9 in order to improve the Railway Network effect. Therefore, we kindly request the addition of the mentioned branches to facilitate the coordination and crossing of freight flows North-South and East-West in this key EU area.

4.- INTERCONTINENTAL GREAT AXIS SCANDINAVIA – RHINE – RHONE – WESTERN MEDITERRANEAN (FERRMED GREAT AXIS)

FERRMED expresses, at the same time, its satisfaction as a result of the inclusion in the Trans-European Network of the Great Axis’s main trunk (which



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crosses eight different states with more than 4.000 km) with the following lines:

Saint Petersburg – Helsinki – Turku – Stockholm – Malmö – Copenhagen – Lübeck – Hamburg – Bremen – Rotterdam/Antwerp/Duisburg – Düsseldorf – Köln – Koblenz – Luxembourg/Apach – Metz - Dijon – Lyon (the east by-pass included) – Avignon/Marseille – Montpellier – Perpignan – Barcelona – Tarragona – Castelló – Valencia – Alicante – Murcia/Cartagena – Almería – Algeciras, considering as well, lines from the east branch: Koblenz – Mannheim – Basel - Bern/Zürich – Milano – Genova.

FERRMED is also gratified by the inclusion in the Core Network of several feeders of the main trunk, as requested.

All this will contribute to a significant reduction of logistic costs and a higher competitiveness of the FERRMED Great Axis Area of Influence “Red Banana” and consequently, to the whole European Union, due to the importance that this Area represents for all of the EU (54% of the population, 66% of GDP, close to 80% of the intercontinental maritime traffic of containers, the most part of exportations, etc.).

Nevertheless, the route through Southern Spain does not cover completely FERRMED proposal and will be necessary to introduce the appropriate modifications. A serious issue is the exclusion of Málaga as node of the Core Network, since its urban agglomeration is well over one million inhabitants. In France the line Lille – Metz has to be included.

5.- MAIN CORE NETWORK CORRIDORS STRATEGY OPERATIONAL AND GOVERNANCE COORDINATION

Global coordination at European level.

This function has to include: traffic and Core Network needs identification, new infrastructures planning, capacity management (demand and supply balance), monitoring, slots assignation, standardization, tracking system (through ITS), maintenance coordination, policies for incentivizing the efficient use of infrastructure, technology and innovation, etc., and has to incorporate, as well, **an EU leading organism and regulatory body in order to coordinate the economic funds allocation for Rail Core Network development and common standards implementation.**

In that sense, to strengthen the role of European Railway Agency and clear definition of the coordination with Infrastructure Managers is a key.

6.- FULL FERRMED STANDARDS IMPLEMENTATION PROPOSAL (FULL FERRMED CORRIDORS)



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FERRMED is very pleased about the guidelines for common standards implementation in the Rail Core Network, stated by the EC DG MOVE TEN-T, because are in line with FERRMED Standards.

However, in these guidelines for rail freight transportation the stated common maximum length of trains is 750 m.

FERRMED in the Global Study, entrusted to a prestigious European consortium of consultancy companies, clearly demonstrates that the only way to increase the EU competitiveness (by logistic costs reduction) and **to reverse the decreasing trend of the railway in EU land transportation, is the complete implementation of the FULL FERRMED Standards, with freight trains reaching 1,500 m length and 5,000 tonnes weight, with UIC-C loading gauge and 22.5 ÷ 25 tonnes per axel.**

1,500 m length is twice the 750 m recommended in the guidelines, for this reason, **FERRMED believes that it is very important to select a few number of key corridors all over the EU (the ones that link the most important industrial and logistics areas and key sea and inland ports) in which the trains can reach 1,500 m.** In the main intermodal junctions with other Core Network corridors the train could be split in two.

This kind of trains (compared with 750 m trains length) allows to increase the payload between 75% and 100%, to reduce operating costs by 25% and to boost the lines capacity in more than 50%.

On the other hand, the increasing rail freight traffic between China, CIS countries and the EU, is fully unbalanced regarding the length and weight of the trains. One Russian train can carry 4 or 5 times more weight than a common EU freight train. That represents from EU side important logistics and transportation costs that have to be avoided.

Therefore, FERRMED asks to the EU and involved Member States to start the gradual implementation of FULL FERRMED Standards, at least, in the following main corridors, based in the European Rail Network for Competitive Freight (rec. 913/2010) proposed by EC DG MOVE (Regulation EC – 913/2010):

FULL FERRMED CORRIDORS

EURASIAN VECTOR

- (Moscow – Minsk) – Warsaw – Berlin – Hamburg/Duisburg – Rotterdam/Antwerpen
- (Moscow – Kiev) – Budapest – Bratislava – Wien – München Karlsruhe – Strasbourg (Luxembourg – Bruxelles – Antwerpen) – Lille – Calais/Dunkerque – London
- (Moscow – Kiev) – Budapest – Ljubljana – Venezia – Torino – Lyon – Paris – Le Havre
- Constanta – Bucharest – Budapest – Bratislava – Wien (Venezia) – Praha – Berlin

WESTERN NORTH – SOUTH VECTOR

- Saint Petersburg – Helsinki – Turku – Stockholm – Copenhagen – Hamburg – Duisburg – Koblenz – Luxembourg/Apach – Lyon – Marseille – Barcelona – Valencia – Murcia – Almería – Málaga – Algeciras
- (Rotterdam – Duisburg) – Koblenz – Mannheim – Karlsruhe – Basel – Bern/Zürich – Milano – Genoa

In total: 13,000 km (less than 20% of the Core Network total Km) to be achieved by 2030.

INVESTMENTS AND BENEFITS

By extrapolating the results of aforementioned FERRMED Global Study, it can be said that **the total required investments, in the aforementioned “Full FERRMED CORRIDORS”, are approximately 58 billion Euro in 18 years** (including bottlenecks solving, UIC-C loading gauge, 1,500 m trains length, ERTMS implementation, international tracks width in Iberian Peninsula, terminals adaptation and the removal of 10% of the existing freight wagons fleet by the ones with automatic couplings and FERRMED conception), **the savings from 2016 to 2045 are 350 billion euro and the economic rate of return 12%.**

It is the only way to reach a competitive EU Freight Railway Core Network.



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7.- FERRMED FREIGHT LOCOMOTIVE CONCEPT MAIN CHARACTERISTICS

FERRMED FREIGHT LOCOMOTIVE CONCEPT



DEVELOPED BY

The "FERRMED Locomotive Concept Study" has been developed by ALSTOM, APPLUS, Càtedra ALSTOM UPC, Col·legi d'Enginyers Industrials de Catalunya, Colegio de Ingenieros Industriales de la Comunidad Valenciana, FAIVELEY Transport and VOSSLÖH.

FERRMED TRAINS CHARACTERISTICS

Lenght	1.500 m
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

The aim of this study was to define the minimum design parameters that the EU locomotives should accomplish to fulfil the technical FERRMED Standards, particularly long and heavy trains.

The items analyzed are: power, pantographs, adherence, coupling, multiple traction, brake system, interoperability, ergonomic and safety, signalling, noise emissions and energy efficiency, among others.

FERRMED FREIGHT LOCOMOTIVES CHARACTERISTICS

Starting tractive effort of the locomotive	300 kN - 400 kN
Power of the locomotive	3.500 kN - 5.000 kN
Axle load	22,5 t/axle—25 t/axle
Axle arrangement	Co-Co or Bo-Bo
Maximum speed	120 km/h
Track gauge	1435 mm
Loading gauge	UIC C
Adhesion coefficient (μ)	At least 33%
Type of traction	Diesel locomotive or Electrical multi-tension locomotive
Pantographs (for electric locos)	2 devices type C and 2 devices type D
Multiple traction	Yes, distributed traction (not only locomotives on train's head)
Coupling	Automatic, with capability to connect current UIC screw couplers and Russian couplers
Brake	E-ECP Brake System (Enhance-electronically controlled pneumatic system)
Interoperability	Yes. Fulfillment all applicable TSI and other European Directives
Safety and Signaling system	ERTMS
Train control system	ETCS
Radio system	GSM-R
Cab	2 cabs with central desk ensuring safety and comfort of the driver
Noise	TSI CR Noise
Exhaust Emissions	EU 2004/26 Stage IIIB
Material	About 95% recyclable materials
Others	Incorporation of state-of-the-art technologies to improve energy efficiency Incorporation of state-of-the-art driving advice systems and operations assistance systems



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8.- FERRMED FREIGHT WAGON CONCEPT MAIN CHARACTERISTICS

FERRMED FREIGHT WAGON CONCEPT



DEVELOPED BY

The “FERRMED Wagon Concept Study” has been developed by the Royal Institute of Technology Stockholm (KTH) - Railway Group and the Institute of Technology Berlin (TIB).

The goal of this study was to analyse the state-of-the-art of freight wagons and to define how should be future EU wagons to fulfil FERRMED technical Standards. This includes the specification of a basic vehicle design, vehicle dimensions and technical equipment, and the definition of the suitable design parameters, particularly in all that concerns to platform and frame concept, axle load, loading gauge, coupling resistance, brakes system, on board electric supply and IT equipment, tare weight, loading pattern and capacity.

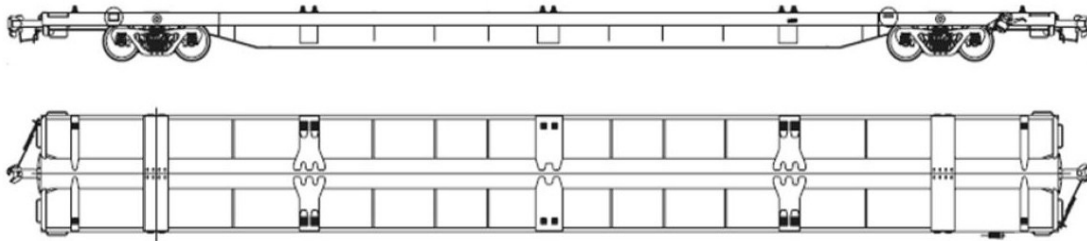
PLATFORM CONCEPT

Several wagon types can be demanded/detachable superstructures.

3 BASIC DESIGNS

- Design A1. Long Wagon: mainly for intermodal/volumen-cargo (25m of loading length)
- Design A2. Short Wagon: for bulk and break-bulk commodities
- Design B: Flat wagon for trailer transport

Top view



KEY PARAMETERS

Axle load	22,5 t/axle—25 t/axle
Speed	100 + 120 km/h
Loading gauge	UIC GC
Central beam	
Automatic central couplers	
Electric power supply / IT equipment	
Compact brakes	
Tare weight decrease	

MAIN ADVANTAGES

Design A1:

- More capacity when loaded with containers
- Better adapted to 40' containers
- 50% more capacity when loaded with C-Swap bodies

Design B:

- Handles 100% of European semi-trailer fleet



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9.- FULL FERRMED CORRIDORS NETWORK



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