

Demand study on the Lyon-Madrid Axis

EXECUTIVE SUMMARY

The CLYMA project helps the different stakeholders to identify the main drivers for the corridor's development.

There is a need to identify the current and future freight flows of goods in the Madrid-Lyon section of the Mediterranean corridor, considering:

- The evolution of demand in future years.
- The expected modal transfers from road (the main surface transport mode used today) to more sustainable modes of transport such as rail and inland navigation.

STUDY CONDUCTED BY:
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The full document is accessible to the Stakeholders Interest Group of the project on the CLYMA website: www.clyma.eu



DEVELOPMENT OF THE
**CONNECTION
LYON-MADRID**
ON THE MEDITERRANEAN
CORRIDOR



Co-financed by the European Union
Trans-European Transport Network (TEN-T)

Methodology used for the current study:

1. **Analysis of the current volumes exchanged by transport mode among the different territories which are part of the corridor** (road, rail, short sea shipping and river transportation).
2. **Evolution of freight volumes by means of transport from 2005 to 2010**, to understand evolution of each means of transport and obtain a first overview of the current situation, critical points, bottlenecks and determinant flows.
3. **Starting from the volumes registered in 2010, an annual increase of 3% has been estimated in order to forecast expected volumes in 2020 and 2030.**
4. **Minimum requirements for modal shift.** In the current scenario, rail is not considered a global alternative transport mode as it did not satisfy the minimum requirements and expectations of potential users. Only if rail services meet these requirements in an immediate future, significant modal shift from rail to road might be achieved.
5. **Modal shift by type of goods.** The potential attraction of rail services depends on several factors, which are more or less sensitive according to the kind of goods to be transported. Therefore the different traffics have been analysed separately, in order to make assumptions of modal shift, case by case and according to the features of each traffic flow.

Based on this methodology, a graphic has been drafted outlining the **evolution of traffics by transport mode and specifically by road and rail**, which are the ones with more potential development in terms of capacity. Inland navigation and port traffics have been analysed in the study but the results are not included in this brochure.



Sources of information

Data used have been obtained mainly from traffic statistics, databases and from relevant studies carried on periodically by several official bodies.. Basic sources are:

- **Observatoire Hispano-Français de trafic dans les Pyrénées” (OTP)**
- **Enquête transport routier de marchandises. (Ministère de l’écologie, du développement durable et de l’énergie de France)**
- **Traffic statistics Spanish origin/destination (Spanish Ministry of Public Works)**
- **ETIS Plus -European Transport Information System**



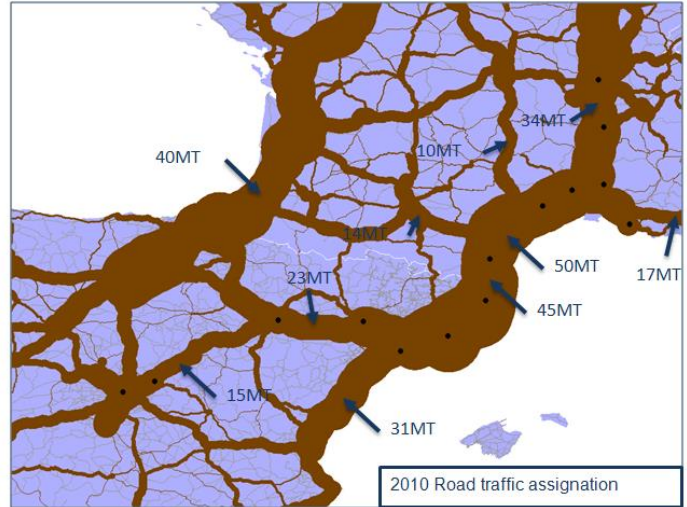
Current volumes

Road

Traffic in the Mediterranean corridor is 25% higher than in the Atlantic corridor. Freight traffic between La Jonquera border and Narbonne accounts for 45Mt. In the connection with the A61 to Toulouse the traffic increases to 50 Mt. Highest volumes however are located around Barcelona.

North of Lyon and South of Tarragona, both ends of the corridor section, there are 34/31 Mt, whilst down to Valencia, traffic declines.

Toulouse and Zaragoza add 14 Mt and around 20 Mt respectively.

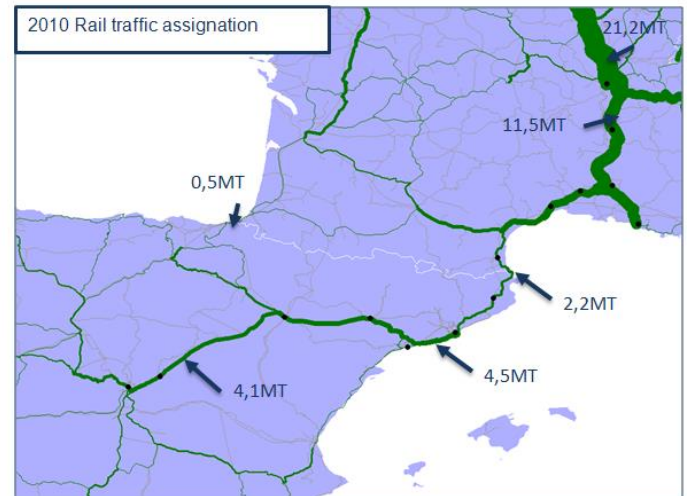


Rail

Rail volumes are significantly smaller than road flows. The major traffic concentration on the corridor is found from Lyon up North, where traffic to/from South East France (11,5 Mt) connects with traffic to/from Italy and traffic generated around Lyon to the North, totalising 21,2 Mt.

Marseille/Fos, Toulouse and the area in Le Boulou and Perpignan are the main traffic generators in the South.

Total traffic crossing the Pyrenees remains very small, 2,7 Mt; the Mediterranean corridor accounts for 2,1Mt of this amount. Spanish internal traffic is basically between Madrid-Tarragona-Barcelona, with 4,1-4,5 Mt.



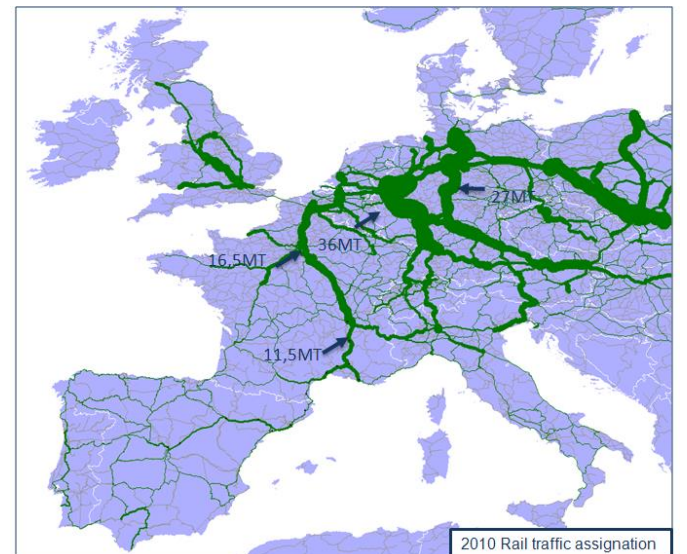
European rail traffic

Graphic shows a poor use of rail transportation in the Iberian peninsula and in the Atlantic corridor until Paris, compared with rail volumes in Central Europe and towards the Atlantic.

Rail volumes in Spain, West of France and Italy South of Florence are significantly low.

There is a predominance of North/South compared with East/West connections.

The sector Madrid-Lyon of the Mediterranean corridor connects important populations and industrial areas and obviously has a great potential to be developed, once the infrastructure and bottlenecks are solved.



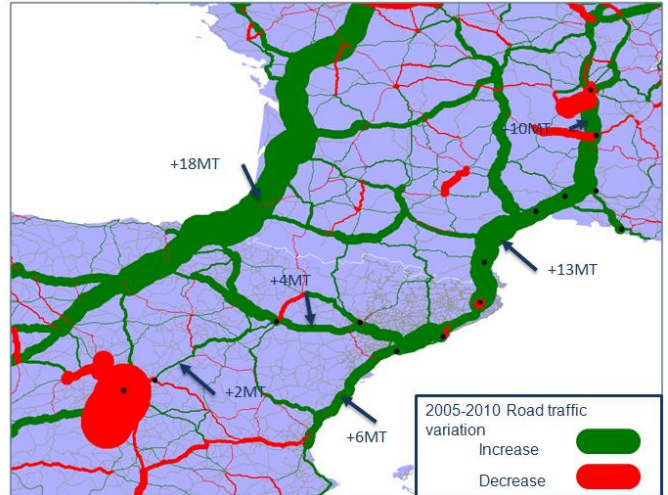
Comparison of volumes between 2005 and 2010

Road traffic

The comparisons should consider the **effect of the crisis** in the period. There have been **significant decreases** in specific areas: Madrid-Toledo, Valence-Le Puy, Albi-Rodez and Lyon-St-Étienne. In all cases the decrease focuses on products such as construction materials and minerals.

Major traffic increases are concentrated in the Mediterranean and Atlantic corridors, compared with stability or lesser increases in the remaining areas.

The slight traffic decrease observed between Madrid and Valencia might correspond to modal shift to new rail freight connections, connecting Madrid with the port of Valencia

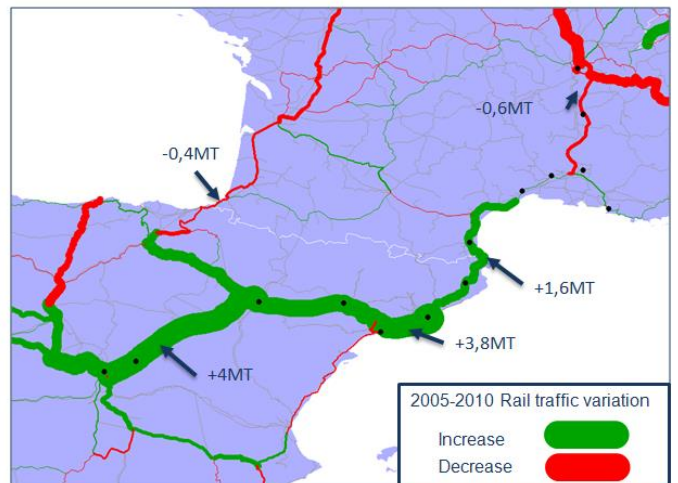


Rail traffic

There is a remarkable decrease in traffics to/from Italy, and a decrease of 0,6 Mt from Lyon to Avignon. A similar decrease can be observed in the Atlantic corridor. There has been a decrease in traffic everywhere except Madrid-Barcelona and to South of Montpellier.

Substantial increases in the Barcelona-Tarragona-Madrid section, probably due to the new rail freight services connecting the Port of Barcelona and Zaragoza, with some traffic also to/from Madrid.

In 2009 new rail freight services were established between Barcelona and Lyon.



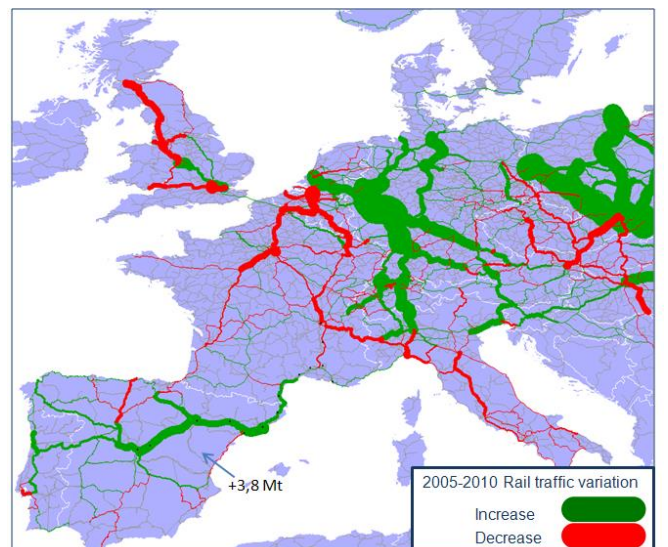
European rail traffic

This graphic shows traffic variation in absolute figures. For the Madrid-Barcelona segment, there is an increase of 3,8 Mt.

Traffic in France and Italy (except between Milan and North) has registered losses, whilst in Germany it has increased. Traffic slowdown in France was partially due to strikes in French ports in that period.

There is a transfer of traffic from the Rhône axis to Rhine.

There is an increase of traffic connecting with the port of Gdansk and Poland in general.





Minimum requirements for modal shift

Rail offer does not meet today the minimum requirements requested by shippers. Some minimum requirements identified below, must be fulfilled so that users of road transport services shift to rail.

Improvement of infrastructures for granting a minimum capacity

- Double track along the whole corridor.
- Sufficient commercially viable slots for freight trains in commuting areas. No mixed lines high speed passenger trains and freight trains.
- Sidings of 750 meters minimum.
- Slopes adapted to freight trains (less than 12%). No restrictions in crossings with passenger trains.
- Gauges allowing P400 standards.
- UIC gauge
- 24 working hours on terminals and competitive prices

Access to the slots

- Distribution of slots can not be subject to the current rigid regulation.
- Freight trains must be allowed to circulate during normal working hours. Requirements to run mainly when there are less passenger trains results in unacceptable extension of transit times, causing the train to lose its competitive advantage against road.

Real competition in the market should be intensified

- The corridor's interoperability must be ensured removing restrictions.
- Simplification terms and costs to certify companies, materials and drivers.
- Easy access to rental markets and/or leasing rolling stock.
- Establishing a unique language for international communication among rail operators.
- Access to infrastructure information. Confusion and secrecy of the information and requirements of the railway network represent a major bottleneck today.
- Generalize cargo and rail tracking systems, with transparent access to customers, whether rail operators, road transport operators and end-shippers.

New intermodal services should be promoted based on:

- Widespread acceptance of UTIs in the standard gauge P400. This allows to load both 4 meters high semi-trailers and swap bodies.
- Multi-client and multi-segment trains (containers, tanks, swap bodies, semi-trailers).

Modal shift by type of good

Modal shift is based on various parameters combined among them. This combination should result in a price for ITU/Km competitive with road.

Distance to be covered / Balanced flows / Volumes and regularity of traffic / Type of goods / km covered by rail from the total journey

Modal transfer from road to rail is considered **depending on the type of product and the distance traveled**. Only some products are selected for transferring to rail.

Type of good	Modal shift		Remarks
	+100 Km	+1.500 Km	
Products of agriculture, hunting, forestry and fishing	0%	10%	A big part is refrigerated cargo, not suitable for standard rail transport
Food products, beverages and tobacco	5%	30%	Canned or packed food, liquids are transported usually in high volumes
Wood and paper	5%	50%	Paper and pulp traffic is suitable for rail (high volumes, few origin/destinations)
Chemical products	10%	60%	Chemical traffic suitable for rail (high volumes, few origin/destinations)
Transport equipment	10%	60%	Automotive (cars) concentrated in few origin/destinations.
Machinery, electronic goods, furniture and other manufactured goods	5%	20%	Miscellaneous. Part of this suitable for rail.
Remaining groups	0%	0%	Considering that in the remaining groups there are no significant drivers for a modal shift.

Demand forecast

The graphs show the foreseen evolution of road and rail volumes, considering a **3% global annual increase from 2010 and the modal shift to rail according to the hypothesis established in general and for each type of products.**

Evolution of road transport flows

There is a **significant increase of road traffics everywhere**, namely on the Mediterranean coast and Rhone Axis.

Evolution of rail transport flows

There is a **strong potential for the use of rail traffic**, provided that the system meets the minimum requirements requested by shippers.

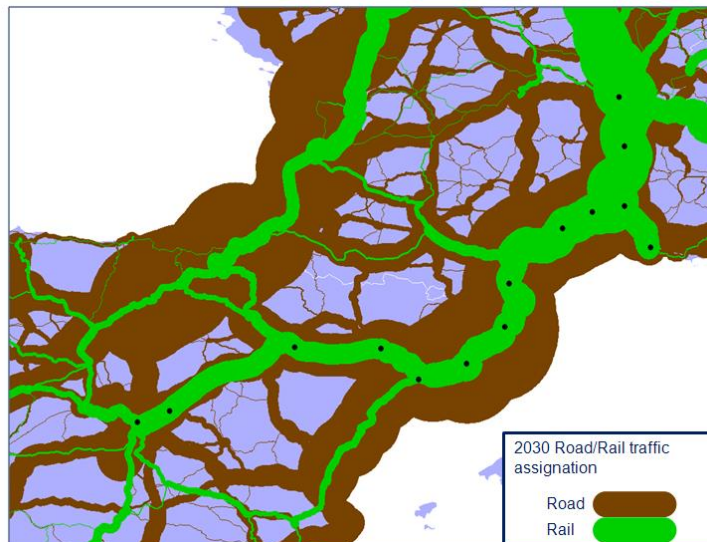
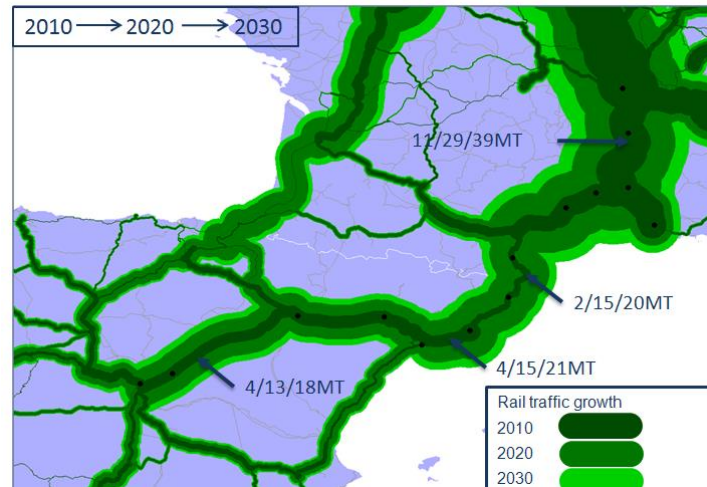
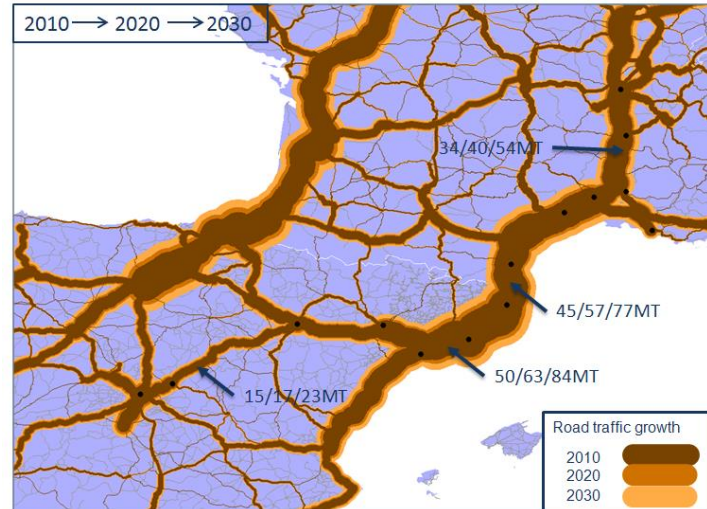
The **expected growth of rail traffic from/to Spain in the coming years will be generated by the Madrid-Lyon corridor.**

Less progress can be observed in the South of Tarragona, because a substantial % of flows require temperature-controlled transportation.

Evolution of rail/road flows

In relation to the modal shift, the graph shows **the predominance of road transportation in respect to rail, in the horizon 2030, even if some modal shift to rail has been achieved.**

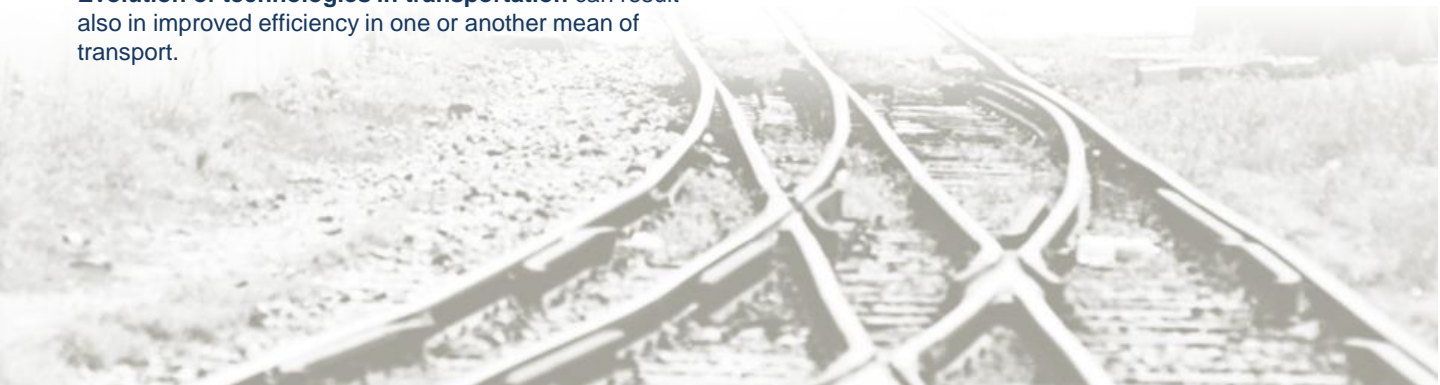
In comparison with the more significant development of rail services in the sector Lyon-Madrid, **the small development of the rail South of Tarragona is due to the fact that transportation there often requires temperature controlled vehicles**, not extensively available by rail in the current technical development. Should this become possible, the relation road/rail in this segment would change significantly in favour of rail.





Comments

- The studied section of the Madrid-Lyon axis handles a significant volume of goods, with two main generation points, **Barcelona** and **Lyon**.
- The incorporation of traffic from Italy adds more volumes South of Lyon, with a significative traffic flow to and from Fos-Marseille, as well as from Midi-Pyrenées, which is not directly connected to the corridor today.
- Traffic generated in the **Mediterranean corridor** is more important than the **Atlantic corridor**.
- Majority of goods are today carried by **road**.
- **Very small presence of rail transportation**, except South of Lyon with the incorporation of Italian traffic.
- A quick comparison between Southern European rail volumes and those in Central and Northern Europe proof that **there is room for a net increase of this mode of transportation, removing traffic out of roads**.
- This important potential **development of rail services depends on the fulfilment of the minimum service requirements**. Most requirements depend more on the provision services than on infrastructures, although there are still some major works to be done.
- Regions not included in the corridor are intensively linked to it, as it could be the case of **Midi-Pyrenées in France**.
- Although a 3% demand increase has been considered, this assumption is based on a **positive economic evolution**. Changes in European logistics may also affect positively or negatively this general percentage.
- **Ports are, together with inland terminals and with intensively populated areas, the main drivers in the generation of traffic flows**. Mediterranean ports are competing with Atlantic ports in obtaining a more important share in the main traffic stream, Far East – Europe.
- **Evolution of technologies in transportation** can result also in improved efficiency in one or another mean of transport.
- **Oils prices** also have a substantial impact in modal shift.
- **Road transportation has introduced new technologies** with efficient energy engines (Euro VI), as well as increased security measures, making road transportation more competitive.
- **Rail transportation needs to be modernised, more reliable and must reduce its costs**. The recent creation of “Shift2Rail” by the European Council can be a strong help in that effort, but the results are not yet there.
- **The lack of substantial innovation in rail transportation results** in today’s use of old technologies, non interoperability of the rolling stock, and finally an expensive cost structure. The introduction of some basic improvements may result in important gains in efficiency.
- In the Mediterranean corridor, a significant demand of transportation is composed by **refrigerated or temperature-controlled cargo**. Fruits, vegetables, meat, fish, wine... are transported mainly South/North but also in other directions in very important volumes.
- If rail becomes able to offer adequate solutions to **refrigerated multimodal units**, significant traffics could be shifted from road, increasing the demand of rail.
- Finally, **public policies towards internalisation of transport external cost can also have a major impact on modal shift**:
 - Fiscal measures **penalising the use of more contaminating modes of transportation**, as the “ecotax”.
 - The introduction of **limits to the use of high sulphur bunker** in the maritime transportation.
 - The introduction of **measures promoting the use of multimodal transport services**, as the “ecobono” in Italy or the “coup de pince” subventions in France.



CLYMA project consists of the implementation of the corridor approach to a section of the **Mediterranean corridor**, concretely to the Western part of the corridor and specifically to the Lyon-Madrid Axis.

The project comprises of studies and actions on the organization and optimal implementation of the **TEN-T network**, taking into account long term perspectives, environmental aspects and associated needs, as well as studies that promote environmental sustainability, resource efficiency and low-carbon transport within an integrated transport concept. This should stimulate the deployment of the **Green Corridor concept**. The project also intends to develop a **managerial structure** for the intermodal corridor.



PROJECT OFFICE



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