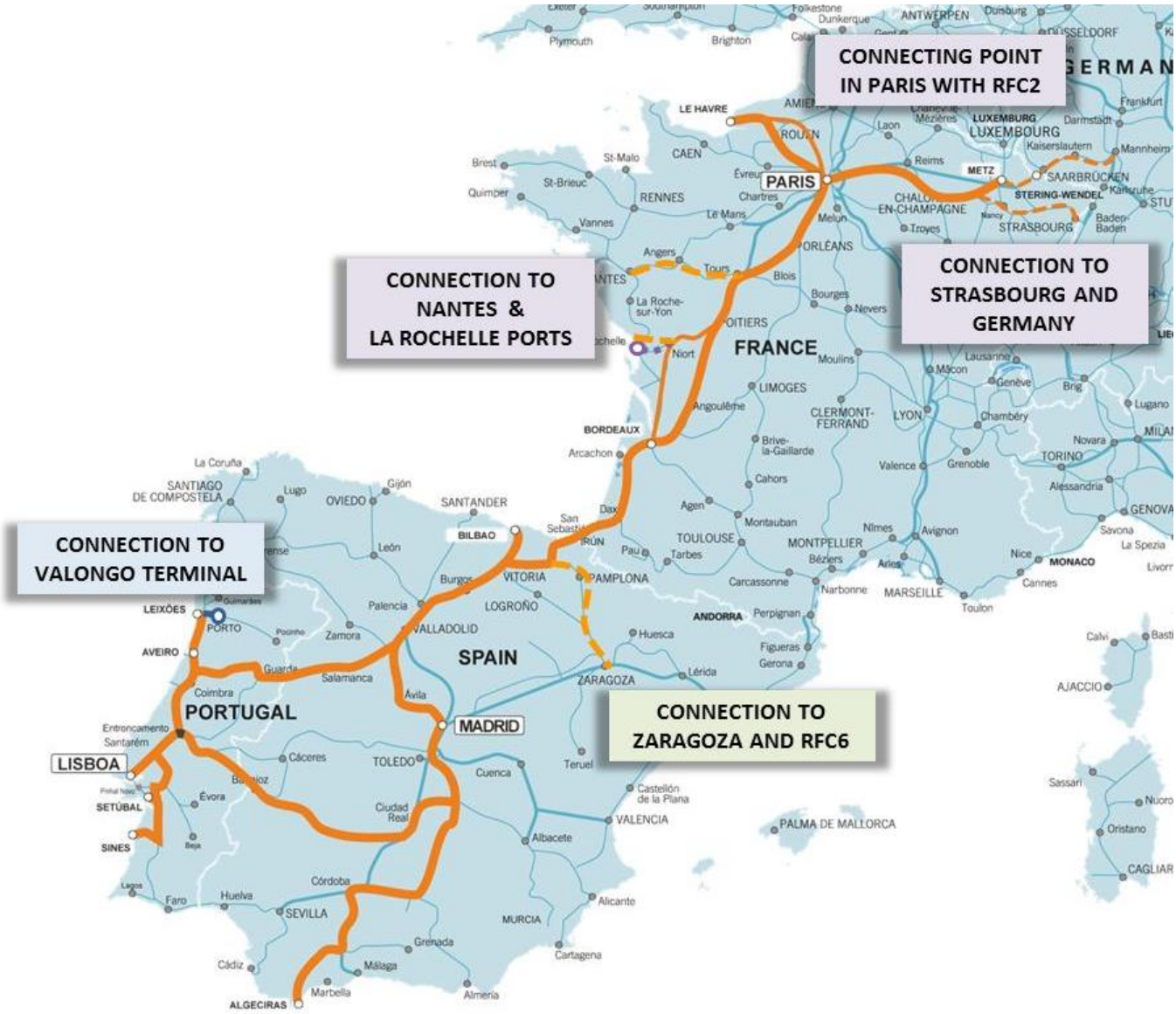
European Freight Corridor 'Atlantic'

Assessment optimization of capacity management and operational coordination

DRAFT SYNTHESIS REPORT

02/08/2016



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0. INTRODUCTION

This study aims to assess the optimization of the international rail freight capacity allocation along the Atlantic Corridor. Indeed, the main task is to define and allocate capacity, and coordinate the operation of traffic management and planning of maintenance periods.

This general objective has been broken down into two scopes:

1. To evaluate, assess and identify possible improvements of main issues related with capacity
2. To propose alternatives in order to increase capacity allocation for international freight trains

The main issues related with capacity along the Atlantic Corridor that have been studied are:

- Works along the corridor axes
- Maintenance schedules
- Urban nodes and terminals
- Cross-border and tools

This document tries to synthesise the most relevant aspects affecting these issues.

First, it has been analysed maintenance schedules and works along the corridor axes, in order to get a general overview of the routes taken by international trains along the corridor, and the possible impacts on traffic in the coming years.

Then, it has been analysed the main urban nodes along the corridor (Lisbon, Madrid, Paris and Mannheim), the interaction with passenger traffic, and the accessibility to closest terminals.

Finally, it has been carried out the analysis of the three cross-border sections. They are particularly sensible because of the related issues: type of infrastructures in both sides of the cross-borders, type of communications between countries (including information systems), consistency to optimize maintenance and works schedules at international level, need of manoeuvres and/or stop in the border, etc.

All these analysis have allowed to identify possible improvements.

1. WORKS ALONG THE CORRIDOR

In this section the main works scheduled for next years along the corridor are related. The information will indicate: the works to be carried out, the implementation schedules and the impacts that they will produce on train's movement during their execution.

1.1 PORTUGAL

The main works for the following years are listed below:

- **Between Luso and Guarda**, structure rehabilitation and track renewal are planned in the line. The works will be carried out in maintenance period during week days and almost the whole week-end. In 2020 and 2021, the line will be permanently closed. An alternative itinerary will be open through **Abrantes – Guarda**. For that reason in section Covilha – Guarda (currently no electrified), works of electrification and signalling will be carried out during week days. These works will be done since 2017 until the total closure of line Luso – Guarda in 2020.
- **Between Lisboa and Porto**, some works are planned from 2017:
  - Signalling renewal works to implement BAB will be carried out during maintenance periods, at night and during the week-end.
  - Track and catenary renewal and geotechnical intervention: in 2017 at Alfarelos – Pampihosa, in 2018 at Santana Cartaxo – Entroncamento, the rest being implemented in 2021. Traffic will be allowed in one track, except for some sections, where the line will be closed during the works.
- Regarding the **line Abrantes – Elvas**, some works will be done during maintenance periods for 4 hours: structure rehabilitation, rehabilitation investments to increase speed and modernisation of Elvas cross-border. As it is a single line, some sections will be closed during the implementation period, and speed will be restricted to 40 km/h in Elvas – Badajoz.

Below is presented a schematic representation of these works for 2017 and their impacts on traffic.

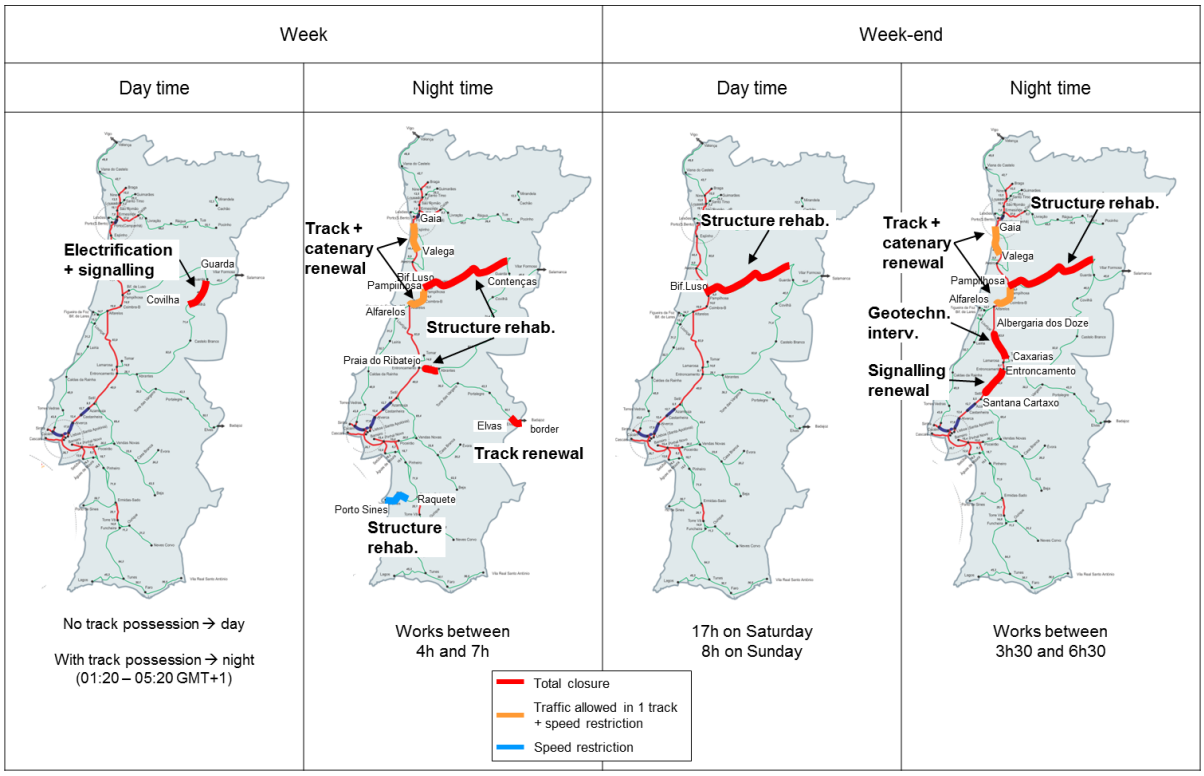

*Figure 1: Works planned in Portugal for **2017**. Source: IDOM elaboration*

1.2 SPAIN

Principal works planned in the Spanish part of the Rail Freight Corridor for the following years are the following:

- In the section **Algeciras – Gaucin**, track will be renewed and BAB + CTC will be implemented during maintenance window (00:00 – 03:00). No impacts are planned.
- The stretch **Fuentes de Oñoro – Salamanca** will be electrified in 25 kV. Works will be done during maintenance period (15:30 – 18:30), thus the works will not have an impact on traffic.
- Between 2016 and 2018, the section **Astigarraga – Irun** will be implemented with the 3rd rail, adapting catenaries, and BAB blocking system. Gauge in 3 tunnels will be increased and 3 metal bridges will be performed. There will be some speed restrictions, and one track will be closed when working in each tunnel (day and night), but is important to underline that the works in each tunnel will not be carried out simultaneously to any other work in another tunnel. These works are the most important because of their impacts on traffic.
- **Vitoria station** functional scheme will be entirely modified, implying the closure of the line in some punctual sections.
- **Burgos station** will be adapted to connect to HS infrastructure from Madrid to link the Y Basque, not affecting traffic.
- **Hernani station** will be rebuilt, restricting speed. Tracks scheme of **San Sebastian** station will be completely modified (project elaboration in progress). **Irun stations** and Bidasoa Bridge will be implemented with 3rd rail and catenaries will be adapted. One track will be permanently closed.

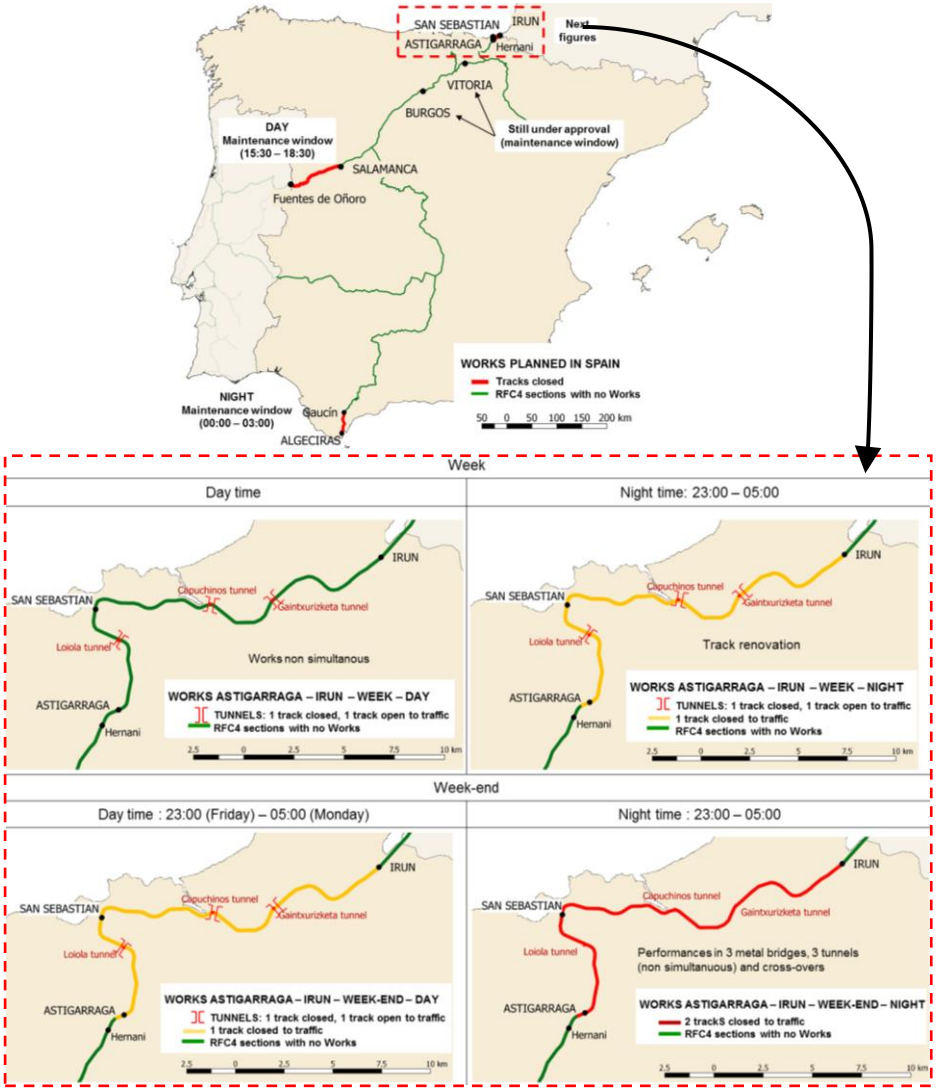

Figure 2: Works planned in Spain along the RFC4. Source: IDOM elaboration

1.3 FRANCE AND GERMANY

Figure 3 : Works ahead 2017 in France and Germany. Source: ARCADIS

Capacity needs related to works are included in the maintenance windows listed above.

Indeed, the French network except as generic maintenance windows that are activated during a specific number of weeks in a year.

Concerning works in France for 2017-2018, opening of the LGV (High-Speed Line) Tours Bordeaux is implying capacity restrictions before opening (1), preliminary after opening (2) and definitive (3). Generic maintenance windows already provide many restrictions.

In Paris Region, regeneration works overhead line (catenaries) between Brétigny and Juvisy will impact works and maintenance periods.

East of Paris, several works have been planned but generic maintenance windows is not much involved: regeneration of the BAL (Block Automatique Lumineux) system between Dormans and Châlons-en-Champagne, regeneration of the track between Rémilly and Bening.

2. PROPOSALS FOR MAINTENANCE WINDOWS

2.1 CURRENT MAINTENANCE PERIODS

PORTUGAL AND SPAIN

In **Portuguese rail network** all current maintenance windows are at night and for a 4 hours period. In single track lines traffic is not allowed during maintenance period: Luso – Vilar Formoso, Entroncamento – Elvas, Sines – Setil, Leixoes – Contumil. In the rest of sections there is a banalised double track line and traffic is allowed in at least 1 track during maintenance windows.

In **Spanish rail network** maintenance windows are between 3 and 5 hours period and generally at night, but there are some few sections on which maintenance windows are during day period. In single track lines traffic is not allowed during maintenance periods: Algeciras – La Roda de Andalucía (3 hours at night), La Roda – Santa Cruz de Mudela (3 hours during the day), Badajoz – Manzanares (3 hours at night), Fuentes de Oñoro – Salamanca (3 hours during the day), Salamanca – Medina del Campo (3 hours at night), Castejón de Ebro – Alsasua (3 hours at night), Orduña – Medina del Campo (3 hours at night). In the rest of sections there are banalised double track lines, and on them, traffic is allowed in at least 1 track during maintenance windows.

For single-track lines for **both countries** where maintenance windows are split in several different uncoordinated blocks, it has been proposed their modification in order to harmonised them in a unique block that should improve the traffic window in the line.

Figure 4 : Day maintenance along RFC4 in Portugal and Spain. Source: IDOM elaboration

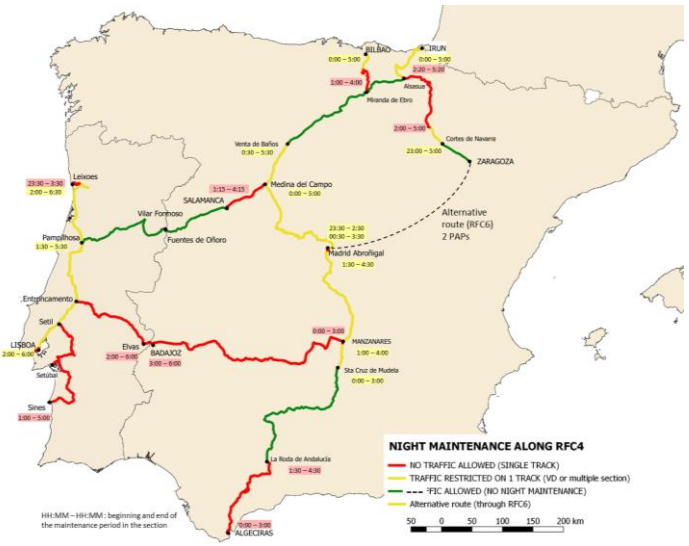

Figure 5: Night maintenance along RFC4 in Portugal and Spain. Source: IDOM elaboration

FRANCE AND GERMANY

In **France**, maintenance periods are different for different sections crossings. Maintenance windows are based on maintenance and works. Between French-Spanish border and Bordeaux Region (Coutras), there is a night maintenance (approximatively 5 hours) and traffic is not allowed or partially restricted according to the sections. Between Bordeaux Region and Orléans Les Aubrais, there is a day maintenance and the traffic is partially restricted for the freight trains. Crossing the Paris Region and eastern France is complicated because maintenance time windows are different in short sections so that crossing Paris Region and eastern France get more complex. In Paris and Bordeaux, peak hours prevent the flow of freight trains on common sections with passenger trains.

On heavily used routes, **Germany** plans maintenance windows for maintenance works. Approximatively 60% of the required maintenance works are expected to be carried out in such defined maintenance windows.

Figure 6 : Day maintenance along RFC4 in France and Germany. Source: ARCADIS elaboration

Figure 7 : Night maintenance along RFC4 in France and Germany. Source: ARCADIS elaboration

2.2 PROPOSED MAINTENANCE WINDOWS

2.2.1 ALGECIRAS – SANTA CRUZ DE MUDELA

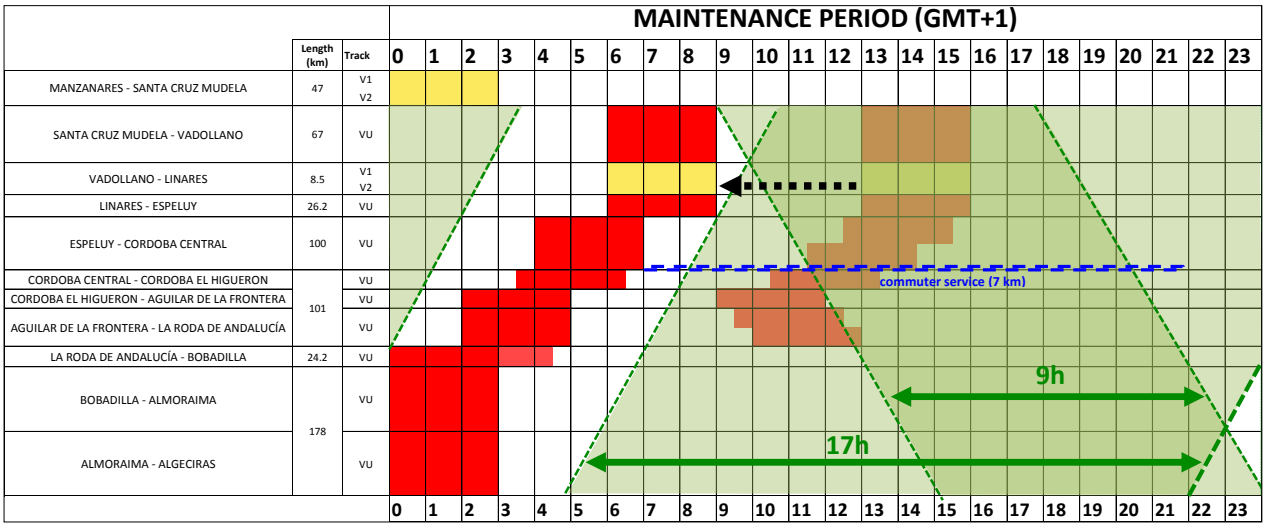

Table 1: Traffic windows proposal Algeciras – Sta Cruz de Mudela. Source: IDOM elaboration

Fitting maintenance windows as follows:

- Between 00:00 and 03:00 for Algeciras – La Roda de Andalucía
- From La Roda de Andalucía to Santa Cruz de Mudela, from day to night – morning (as shows the table).[1]

There is a **gain of traffic window of +4h in the direction South → North and +2h in the direction North → South**. Thus, the capacity on the stretch could be increased in **2-4 to 4-6 paths per day**. This proposal will increase maintenance cost in **1.600.000 – 2.100.000 €/year.**

2.2.2 LUSO (PORTUGAL) – MEDINA DEL CAMPO (SPAIN)

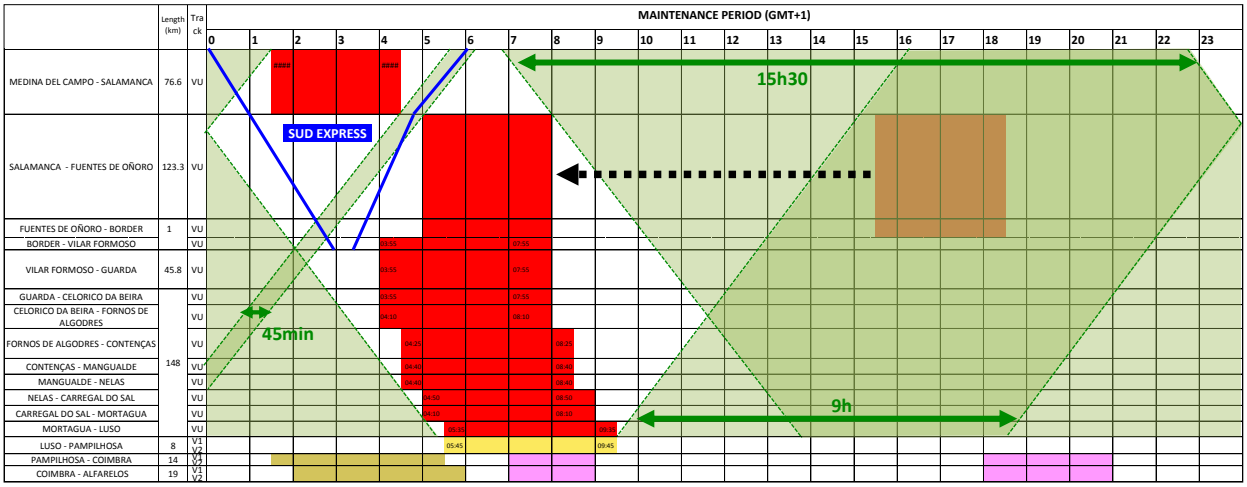

Table 2: Proposal for maintenance windows between Luso and Medina del Campo. Source: IDOM elaboration

Moving maintenance window between Fuentes de Oñoro and Salamanca (125 km) from day to night[2], the traffic window will be **increased in 3,5-4,5 hours.** Thus, the capacity on the stretch could be increased in **3 to 6 paths per day**. This proposal will increase maintenance cost in **370.000 – 492.000 €/year.**

[1] Currently, there is a commuter service between Cordoba Central and Campus Universitario Rabanales (6 km distance), beginning at 07:15 and ending at 21:30. In this section, maintenance should be done between 04:00 and 07:00

[2] ADIF has modified on May 2016 the maintenance window between Salamanca and Medina del Campo from day to night, because of the Madrid – Salamanca passenger traffic increase (High Speed). Current maintenance window is: 01:15 – 04:15.

2.2.3 ORLEANS – FRANCE/GERMANY BORDER

Problem	Proposal	Number of paths created	Cost increase	Comments
No IPCS between Toury and Cercottes (South Paris Region)	IPCS between Toury and Cercottes	None a priori	0	Realised without any action from EEIG Corridor Quality amelioration of some PAPs
Day maintenance window in the Grande Ceinture (Paris Region)	Optimising, then lightening the maintenance window of the Grande Ceinture	Allow Action n°3 to create PAPs	0	Infrastructure officially dedicated to freight Quality amelioration of some PAPs
Night maintenance window between Meaux and Château Thierry ; No IPCS (East Paris Region)	Switching maintenance from night to day between Meaux and Château Thierry ; implies adding IPCS	Approx. 2 parths per hour & direction by night	25 M€	IPCS aims at 3 targets : making maintenance easier, making easier solving of traffic incidents, promoting freight
No IPCS between Dormans and Epernay (eastern France)	IPCS between Dormans and Epernay	1 to 2 paths / hour & direction by day Subject to passengers traffic organisation	20 M€	Allow running from/to Meaux if maintenance is coordinated in [Epernay-Lérouville] & [Charleville Mézières-Longuyon] sections
Day maintenance window between Béning and the FR/GER border	Switching maintenance from day to night between Béning and the FR/GER border	Make easier the drawing of paths from the Action n°3 (IPCS between Dormans and Epernay) or improve their quality	Limited (13 km)	Bound to DB NETZ 2 tracks closing : implies windows coordination between Béning and Metz
No IPCS between Béning and the FR/GER border	IPCS between Béning and the FR/GER border	Approx. 2 paths / jour and direction by night	20 M€	Only if DB NETZ doesn't close 2 tracks anymore

Table 3: Proposal for maintenance windows between Orléans and Eastern France. Source: ARCADIS elaboration

3. URBAN NODES

In this chapter are shown the conclusions of the analysis carried out on accessibility of cargo trains into Atlantic Corridor freight terminals and the impact or compatibility of the scheduled commuter services and other passenger trains around urban nodes, onto the international freight traffic.

CRITERION OF COMPATIBILITY:

Compatibility freight trains with passenger trains: if frequency ≥ 10 min.

With this value we contemplate a margin of regularity between trains (headway): 5 min for passengers / 7 min for freight, and a time reservation for the entry/exit of the freight train from the terminal of the main line.

Nota. *The critical crossings of tracks (4 or more lines) require a longer time for the manoeuvre.*

3.1 LISBON

There are 3 freight terminals in Lisbon urban node: **Bobadela**, **Santa Apolonia** and **Alcantara Terra**.

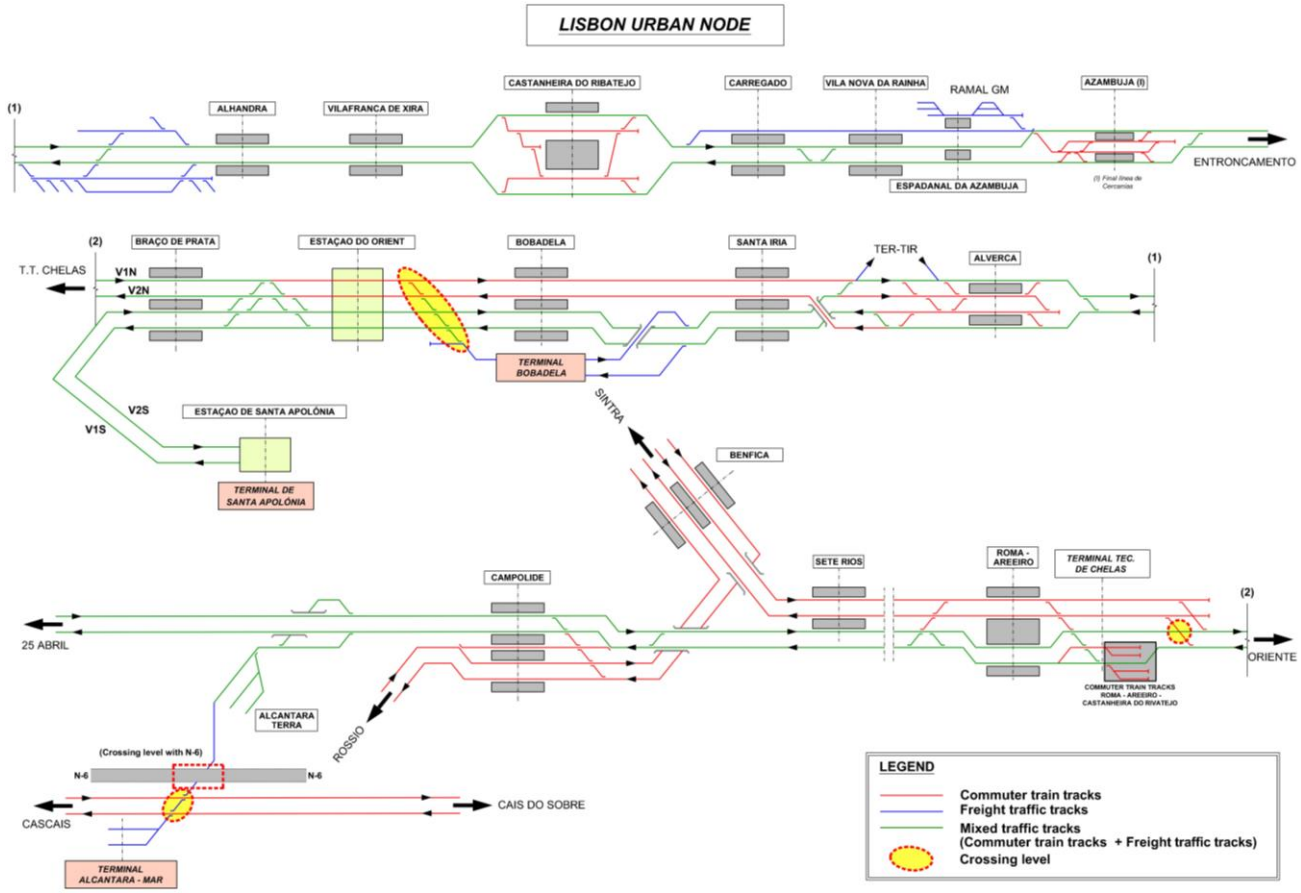

Figure 8: Functional scheme of rail infrastructures in Lisbon urban node. Source: IDOM elaboration

The **access constraints** to the terminal of Alcantara Mar can be qualified as a critical and very complex point because of the affection of the N-6 Estoril motorway.

Concerning **capacity constraints**, there are difficulties:

- In the accesses to the Bobadela terminal in Rush Hour from 17:00 to 21:00 in the double track Alverca – Castanheira
- Possibility of manoeuvres Bobadela – Santa Apolonia throughout the day except in the peak period 17:00 – 21:00 by V1
- The Bobadela – Alcantara Mar manoeuvre is totally incompatible with commuter traffic to Alcantara Terra.

3.2 MADRID

In Madrid urban node, there are located 3 terminals linked to the Atlantic Corridor: Abroñigal (+ reception lines/expedition in Santa Catalina), Vicálvaro Clasificación and Puerto Seco de Coslada.

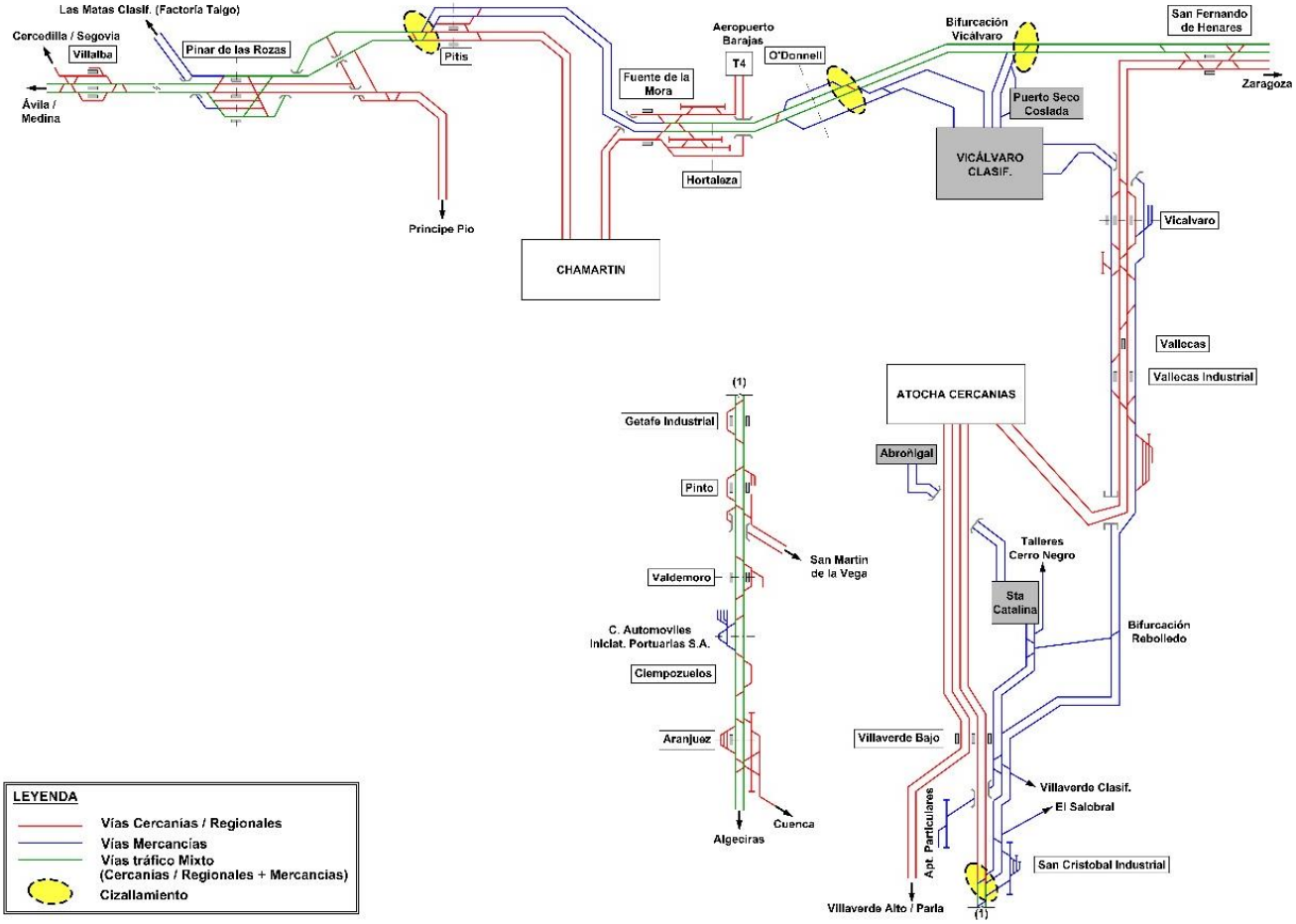

Figure 9: Functional scheme of railway infrastructure in Madrid urban node. Source: IDOM elaboration

Accesses constraints: The accesses to the terminals of the urban node of Madrid do not have any difficulty except in the crossing of tracks of Pitis, as the result of the critical section from 06:00 to 09:00 due to the important commuter traffic.

Capacity constraints: There are no critical time windows between freight trains and commuter / regional traffic in Madrid urban node, except in the section Pitis – Pinar de Las Rozas between 06:00 and 09:00 in which freight traffic is not allowed. In the evening Rush Hour (17:00-21:00) there are saturated sections but with paths scheduled for freight trains (4 trains / 3 hours Pitis – Pinar de Las Rozas and 6 trains / 3 hours Villaverde – Aranjuez).

There are no compatibility problems between freight traffic and commuter / regional traffic in Madrid urban node, except in the section Pitis – Pinar de Las Rozas between 06:00 and 09:00 in which freight traffic is not allowed.

In the evening Rush Hour (17:00-21:00h) there is a saturated stretch, but with paths scheduled for freight trains (4 trains / 3 hours), in the critical section Pitis – Pinar de Las Rozas.

3.3 PARIS

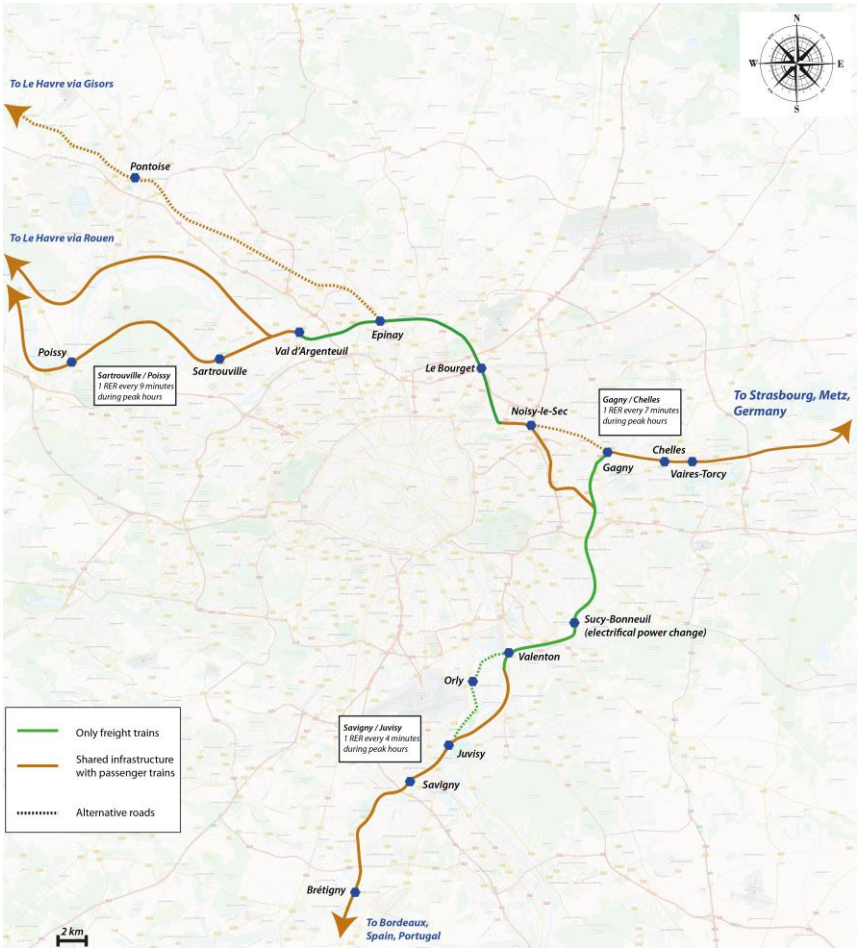

Figure 10: General map from Paris Region including terminals and shared infrastructures. Source: ARCADIS

Considering **terminal accesses in Valenton and Vaires**, there are no major problems at peak hours next to the terminals. But beware of:

- → From East (Metz/Germany): morning peak hours between Meaux and Esbly Vaires
- → From South (Bordeaux/Spain): morning peak hours between Etampes and Juvisy (and Valenton)

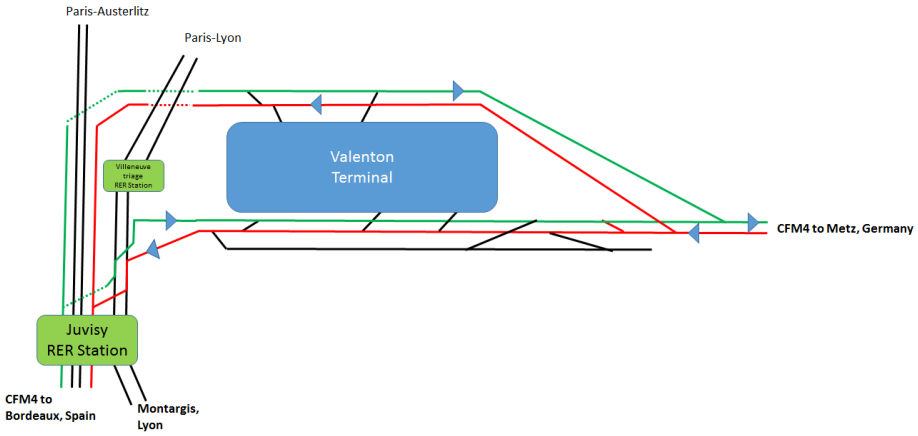

Figure 11: Valenton Access Terminal (source ARCADIS / SNCF RESEAU)

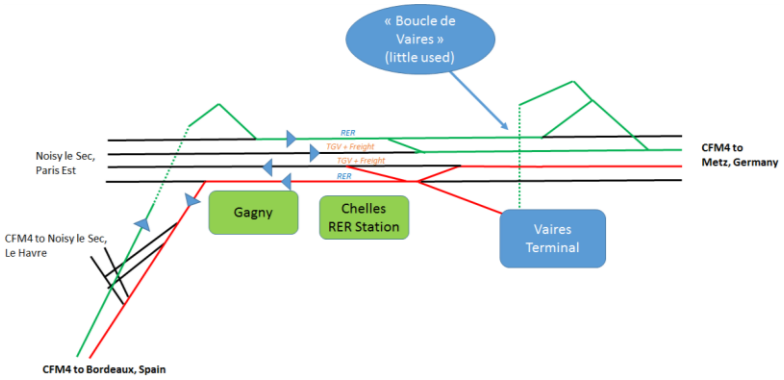

Figure 12: Vaires Access Terminal (source ARCADIS / SNCF RESEAU)

3.4 MANNHEIM

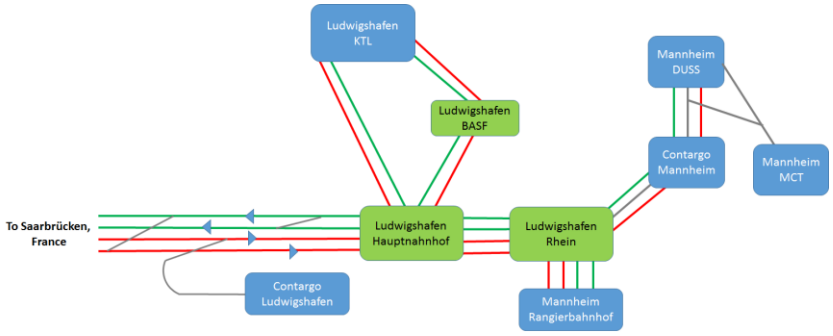

Figure 13: General map from Mannheim/Ludwigshafen including terminals (source : ARCADIS)

In Mannheim node, there are 5 intermodal terminals and 2 marshalling yards: Contargo Mannheim, Contargo Ludwigshafen, Mannheim MCT, Mannheim DUSS, Ludwigshafen KTL, Mannheim marshalling yard and Kaiserslautern marshalling yard.

Mannheim node is also the place where CFM-4 and CFM-1 (Rotterdam/Italy) meet.

From Ludwigshafen Hbf to Mannheim Hbf there is 1 passenger train (Regio, S-Bahn) approx. every 6 minutes at peak hours in the morning and in the evening, according to the DB.

- → A complex node with multiple tracks and terminals
- → 1 of 2 tracks closed at night between the FR/GER border and Mannheim
- → From Neustadt (still a 2 track-line at that point) to Mannheim, there are at least 5 passengers' trains per hour in RH (7:42, 7:47, 8:06, 8:11 and 8:34 in [7:30 - 8:30] period)
- → Drawing Atlantic Corridor paths from French border is still possible in peak hours with these ≈ 5 trains. Probably not more than 1 – 2 per hour and direction

4. CROSS-BORDERS AND TOOLS

This section comes to analyse the problems on border crossing along the Atlantic Corridor: Portugal – Spain (Elvas – Badajoz and Vilar Formoso – Fuentes de Oñoro); Spain – France (Irun – Hendaya) and France – Germany (Forbach –Saarbrüken and Strasbourg - Kehl). The analysis has been done from a dual point of view; the information systems and the infrastructures and operational issues in each country border crossing.

4.1 CROSS-BORDER PORTUGAL / SPAIN

4.1.1 INFORMATION SYSTEMS

ADIF counts on the **SITRA Information System** to find out the gear of the train and all the features of its train arrangement. This information can be accessible from Movement Office of the **border stations**.

In the case of **Portugal, IP**, the **SITRA system** provides information on the gear of the train with respect to the programmed path and does not include the characteristics of the train arrangement. This information is available at the **Dispatching Centre**.

Information about the actual train schedule and his composition characteristics, are not transmitted to the border stations in advance of train arrival.

ADIF and IP have implemented **TCC Com System** but they are not currently using yet the system at border stations.

4.1.2 ELVAS – BADAJOZ INFRASTRUCTURES AND OPERATION

ISSUES IN ELVAS – BADAJOZ

There are no significant issues in Elvas and Badajoz, except for the fact that Elvas station has less and shorter tracks than Badajoz.

Information about the actual train schedule and his composition characteristics, are not transmitted to the border stations in advance to the train arrival.

CONCLUSIONS

- None of both stations receives in advance any information about train operation.
- The locomotive change manoeuvres and the exchange of compositions are performed co-ordinately between Badajoz and Elvas, mainly in Badajoz.

There are not operational and infrastructures problems in this cross-border.

4.1.3 VILAR FORMOSO – FUENTES DE OÑORO INFRASTRUCTURES AND OPERATION

ISSUES IN VILAR FORMOSO-FUENTES DE OÑORO

On Portuguese side, almost all trains use electric traction, doing locomotive changes in Vilar Formoso station, generating situations of saturation in it. Fuentes de Oñoro station only intervenes in case of trains continuing on Portuguese territory with diesel traction.

The saturated time windows in Vilar Formoso station vary from day of the week, time of the day (day or night) and total time (from 1h30 to 9h15), being the worst days Wednesday and Friday: Vilar Formoso is saturated during the day for more than 9 hours in total.

CONCLUSIONS

- 25kV electrification in Portuguese side and diesel traction in Spanish part.
- Stations do **not** receive information about train operation in advance.
- The difference in type of traction creates important problems of saturation in Vilar Formoso because almost all EF use electric traction in the Portuguese territory forcing all operations at this station.
- Once connected both stations to 25 kV, it will be possible to balance and profit the greater capabilities of Fuentes de Oñoro Station, with longer tracks regarding Vilar Formoso.

4.1.4 PROPOSALS

Cross-border Portugal – Spain (both borders)

ISSUE	Proposal	Number of paths created	Estimated cost
Spain: SITRA → running timetable + composition characteristics **Portugal**: SITRA → running timetable	Equip each cross-borders side with a consultation computer terminal of Traffic Control Centre → know whenever real position of trains and their characteristics	- (information / coordination)	< 5,000€
In case of delays	**Short term:** Communicate train passage through already fixed stations on both sides of the cross-border (eg. Salamanca and Pampilhosa / Merida and Abrantes)	-	-
TIS tools: implement the TCC Com	Implement the use of **TCC Com** in Portugal and Spain		
	Enforce people in border stations to use the TIS systems		

Table 4: Synthesis of proposals regarding coordination in all cross-borders between Portugal and Spain. Source: IDOM elaboration from IP and ADIF information

Cross-border Vilar Formoso – Fuentes de Oñoro

Problem	Proposal	Number of paths created	Estimated cost	Comments
Portugal line: electrified Spanish line: non-electrified (diesel) → Operations done in Vilar Formoso → Saturation in Vilar Formoso	**Short term**: Advance the electrification of the stretch Vilar Formoso –– Fuentes de Oñoro Provide temporarily diesel traction at V.Formoso or F.Oñoro	-	200,000€	Once connected both stations to 25 kV, it will be possible to profit the greater capabilities of F.Oñoro station, with longer tracks than V.Formoso. During transitional situation: energy from IP substation
To minimize locomotive changes at the border	**Medium term**: Analyze and promote locomotives penetration of one country into the other	-	-	→ Balance the number of paths among the two border stations, so that no one is overloaded

Table 5: Synthesis of proposals regarding coordination in cross-borders Vilar Formoso – Fuentes de Oñoro. Source: IDOM elaboration from IP and ADIF information

Cross-border Elvas – Badajoz

Problem	Proposal	Number of paths created	Estimated cost
If international traffic increases	**Long term** Suppression of the protected level crossing from the station of Elvas and extension of the useful length of the tracks of the station.	-	-
	Long term Provide the direct access by Merida (West) side to track 5 of the Badajoz Station and extend its length.	-	-

Table 6: Synthesis of proposals regarding coordination in cross-borders Elvas – Badajoz. Source: IDOM elaboration from IP and ADIF information

4.2 CROSS-BORDER SPAIN / FRANCE

4.2.1 INFORMATION SYSTEMS

Currently prior information is not transmitted to the arrival of the train to Irun and Hendaye making it difficult and delaying the whole process of coordination and management of freight trains.

ADIF and SNCF Reseaux have different information systems for traffic control (SITRA in Spain and OCEAN in France) which make it difficult for traffic controllers to monitor information from neighbor country.

Equipment for controlling trains between Irun and Hendaye Position 4 (through Manual Electric Block (BEM)) collecting blocking messages in the LIFE system.

LIFE System sets the trains scheduling and timetable with delays identification and identifying the blocking messages between Irun and Hendaye.

ADIF and SNCF Reseaux have implemented **TCC Com System** but they are not currently using yet the system at border stations.

4.2.2 IRUN – HENDAYE INFRASTRUCTURES AND OPERATION

ISSUES IN IRUN – HENDAYE

- Biggest difficulty along the Atlantic Corridor, as a consequence of the **gauge difference** between both rail networks.
- **Forecasted increase in passenger traffic**, due to the commissioning of the infrastructure planned in Spain and France (Basque Y and LGV SEA), implying the modernization of the Irun – Hendaye Complex.
  Current block (Manual Electric Block BEM) does not allow future traffic forecasts.
- Currently prior information is not transmitted to the arrival of the train to Irun and Hendaye
- Multiple manoeuvers on the bridge Bidasoa as a result of insufficient length of IB gauge track in Hendaye and UIC gauge in Irun
- In Transfesa, the capacity rate is 50%. Opening hours: 05.00 to 21:00
- In Teco Adif, the capacity rate is 80%. Opening hours. 06.00 to 22.00 (everyday)

Irún Station

Access to Irun station from the Basque Y will take place with the current double track with mixed gauge (3rd rail). The most significant actions at the station are listed below:

- UIC track increase in the passenger area
- Access to track CTC in mixed gauge for material processing in 2 gauges
- Installation of 2 long UIC gauge tracks for changing locomotives
- Installation of switchable catenary in the receiving beam UIC in main tracks and passengers siding tracks
- New electronic interlock

The schemes of Irun station in the current situation and the future scheduled one are set out below.

Hendaye Station

The actions in Hendaye Station are scheduled in two phases and its summary is as follows:

- Mixed track transformation (3rd rail) the current Iberian gauge track of Bidasoa Bridge (shared performance with ADIF).
- UIC gauge transformation in tracks 101 and 102, actually in Iberian gauge. Transformation. Switchable catenary.
- Switchable catenary in some tracks
- Single needle post (new interlock and suppression of stop regimen).
- In a 2nd phase would take place the expansion of track 22 with switchable catenary
- The following schemes collect the current situation and future situation (phases 1 and 2) proposals:

CONCLUSIONS IRÚN – HENDAYE

INFRASTRUCTURES

- Equipment for controlling trains between Irun and Hendaye (through **Manual Electric Block (BEM)**) between Irun and Hendaye Position 4 collecting blocking messages in the **LIFE system**.

  LIFE system sets the scheduling and timetable of trains with delays identification and identifying the blocking messages between Irun and Hendaye.
- It is essential to coordinate future interlocks of Irun and Hendaye in order to establish automatic route between both stations.
- Obviously, the ideal situation would be an integral interlock for the entire complex which would imply a single control for both stations, which would control the main tracks, at least in the most important relationships.
- Performances are basically: UIC track increase, switchable catenary, 3rd rail in IB tracks over Bidasoa Bridge and 2 UIC tracks of 600-700 m to change freight trains locomotive in both stations.

OPERATION

- Irun and Hendaye stations do not know in advance the arrival of the train. Coordination and decisions are established after the train stabling
- Difficulties in receiving / dispatching trains. Insufficient number of long tracks with saturation problems.
- In Hendaye and Irun IB gauge tracks are of short length, needing multiple manoeuvres through Bidasoa Bridge to complete the train composition.
- Electric Manual Block. (BEM) do not have the capacity to meet the forecasted traffic increase on Bidasoa Bridge.
- Need to improve information and coordination between the two stations.
- Need to extent length of IB gauge tracks in Hendaye and UIC tracks in Irun,
- There will be direct crossings of UIC trains (with change of locomotive in the case of freight trains.

4.2.3 PROPOSALS

Problem	Proposal	Number of paths created	Estimated cost
If traffic increases	**Short term** Replication of information systems and train control (Sitra Spain and Ocean France) for the information of the running and characteristics of trains by both stations. Investigate the possibility of adding additional information about the destination of the train and transmission to the actors involved (Transfesa / Teco Adif).		
	Medium – long term Analyse the capacity between Irun and Hendaya with the Electric Manual Blocking System. Evaluate the possibility of establishing a train block system between Irun and Hendaye with the highest level of automation relying on the future Irun and Hendaya interlocks.		
Communication – coordination	**Short term** Transmission of characteristics and running of the train in Irún and Hendaye in advance (e.g. passing through the stations of San Sebastian and Bayonne).	-	-
	Short term Replication of interlocking panel in each station, the French one in Irún and the Spanish one in Hendaye to know the occupancy on arrival and departures tracks..	-	-
	Short term Analyse the possibility of reducing the number of manoeuvres between Irun and Hendaye as a consequence of Transfesa and Teco Adif operations. Especially, investigate the possibility of access of electric traction container trains from Hendaye to Teco Adif facilities.		
	Short term Implement the use of TCC Com in Spain and France		
	Medium term Ensure a conjoint management of main tracks of the complex, using the full system capacity without differentiating its location. This goal could be achieved through a concession or a joint collegial direction and in any case from a local dispatching center managing the whole complex.	-	-

4.3 CROSS-BORDER FRANCE / GERMANY

As there is little infrastructure discontinuity between networks, easy crossing of this border is above all a question of availability of paths. Nevertheless, there are some difficulties in operating the main 'border station', which is Forbach. Arcadis has not been able to meet German traffic control staffs in Karlsruhe or Saarbrücken.

4.3.1 FORBACH (FRANCE)

All in all, Forbach station manages present traffics with limited inconvenience, even if there is a lack of tracks of 600m or more.

Managing increasing traffics doesn't necessarily imply infrastructure investments in Forbach itself (longer tracks and/or signalling modernisation). It's more a question of global analysis of all stations (devices, organisation) involved in the border crossings: Forbach, Saarbrücken, Metz-Sablons and likely others, DB Schenker specific policy and inadequate SNCF Réseau tariffs. And, above all, maintenance coordination (see hereunder).

4.3.2 COORDINATION

Maintenance

At the moment French-German coordination does not work well for maintenance issues. Two possibilities of recommendations have been considered:

- Either DB Netz 4 hour-closure is extended well over 2018 (2020s?), because there are still big works ahead (ETCS implementation ? heavy maintenance ?), and Forbach-Béning window may be switched from day to night in order to avoid discrepancies between networks.

  Symmetric possibility has not been considered, DB Netz switching from night to day. Because there are lots of passengers trains running between Hamburg and Mannheim (see Mannheim node), and because French section is much shorter.

- DB Netz will only need a one track closure for maintenance when works on the POS Nord will be completed: the full closure will end after 2018-19, and the French switch is unnecessary.

Paths and information systems

Both France and Germany set up a freight paths catalogue several years ago. The results are now seen as disappointing, especially in France. The path brochure was initially designed as a technical software, better adapted to GI requests (industrialization process) than to customers ones ('customisation'). I.e. more focused on the offer than on the demand side. The number of late minute "special" paths increased, which are regularly modified both by the RUs and SNCF Réseau.

DB Netz is updating its system. It develops the "NEXT" project which is based on a "path allowing algorithm". The main network is divided in sections where specific passengers & freight path are first inserted (e.g. fast or heavy path), and then, paths batteries are drawn in the residual capacity.

SNCF Réseau and DB Netz have started a coordination process. The French IM is about to model its process on the German one, aiming to a possible integration from 2018 on. And on the other hand the German IM thinks about integrating some functions of the French software SIPH, and may implement it in a near future.

4.3.3 PROPOSALS

Maintenance

Put up IPCS devices between German border and Béning, assuming DB Netz will only need one track for maintenance when works on the POS Nord will be completed.

Local traffic control

A joint SNCF Réseau/DB Netz analysis of stations involved in the cross-borders (Forbach, Saarbrücken, Metz…): operational communication (TCCCom), optimisation of marshalling yards, possible changes in SNCF Réseau's tariffs, etc.

Other issues: traffic management, path design….

Further progress in bilateral meetings: telcos, meetings…