

**MEDITERRANEAN
RAIL FREIGHT CORRIDOR**
Spain-France-Italy-Slovenia-Croatia-Hungary

ERTMS interoperability on the Mediterranean Rail Freight Corridor: the state of the art

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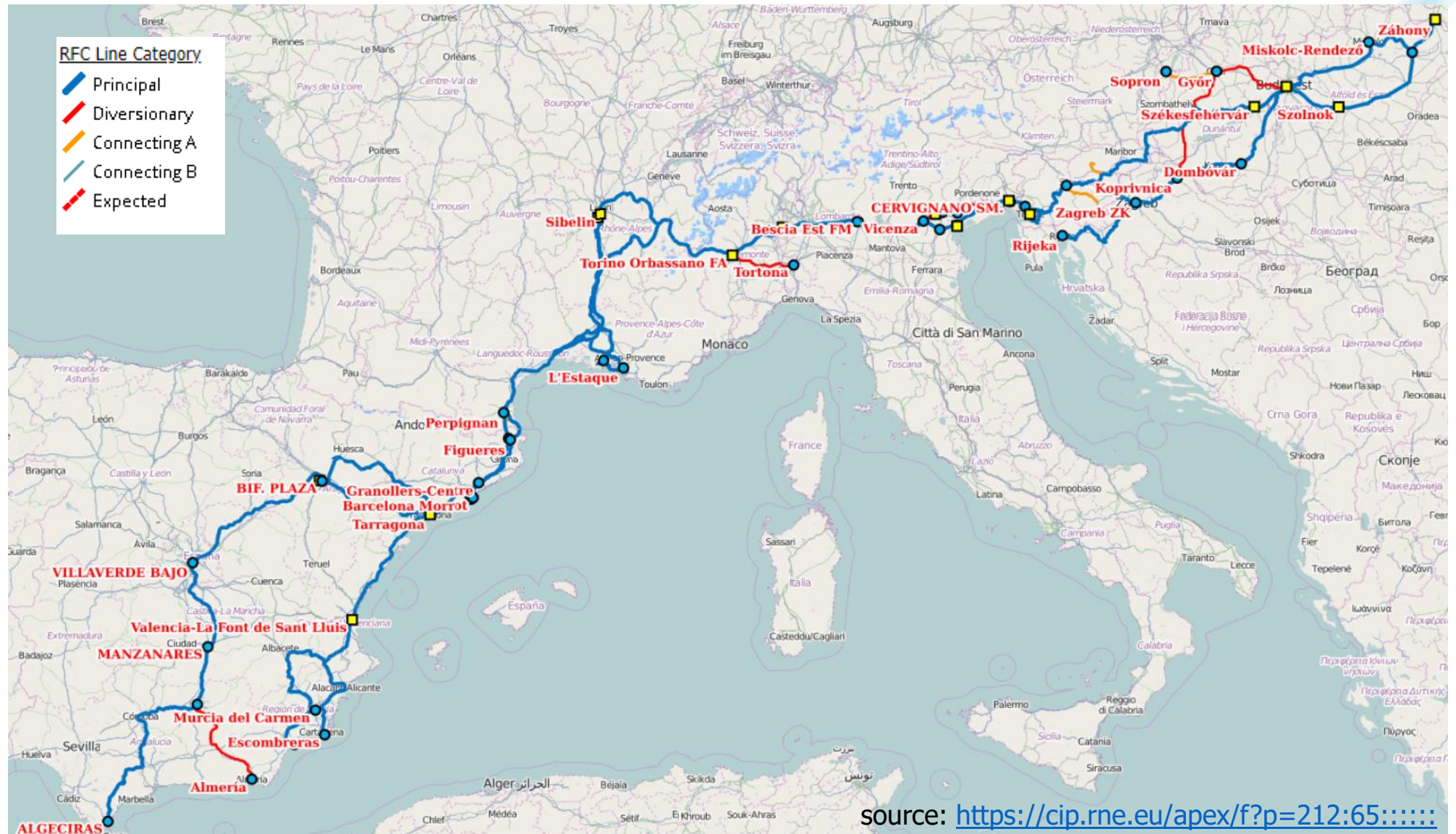


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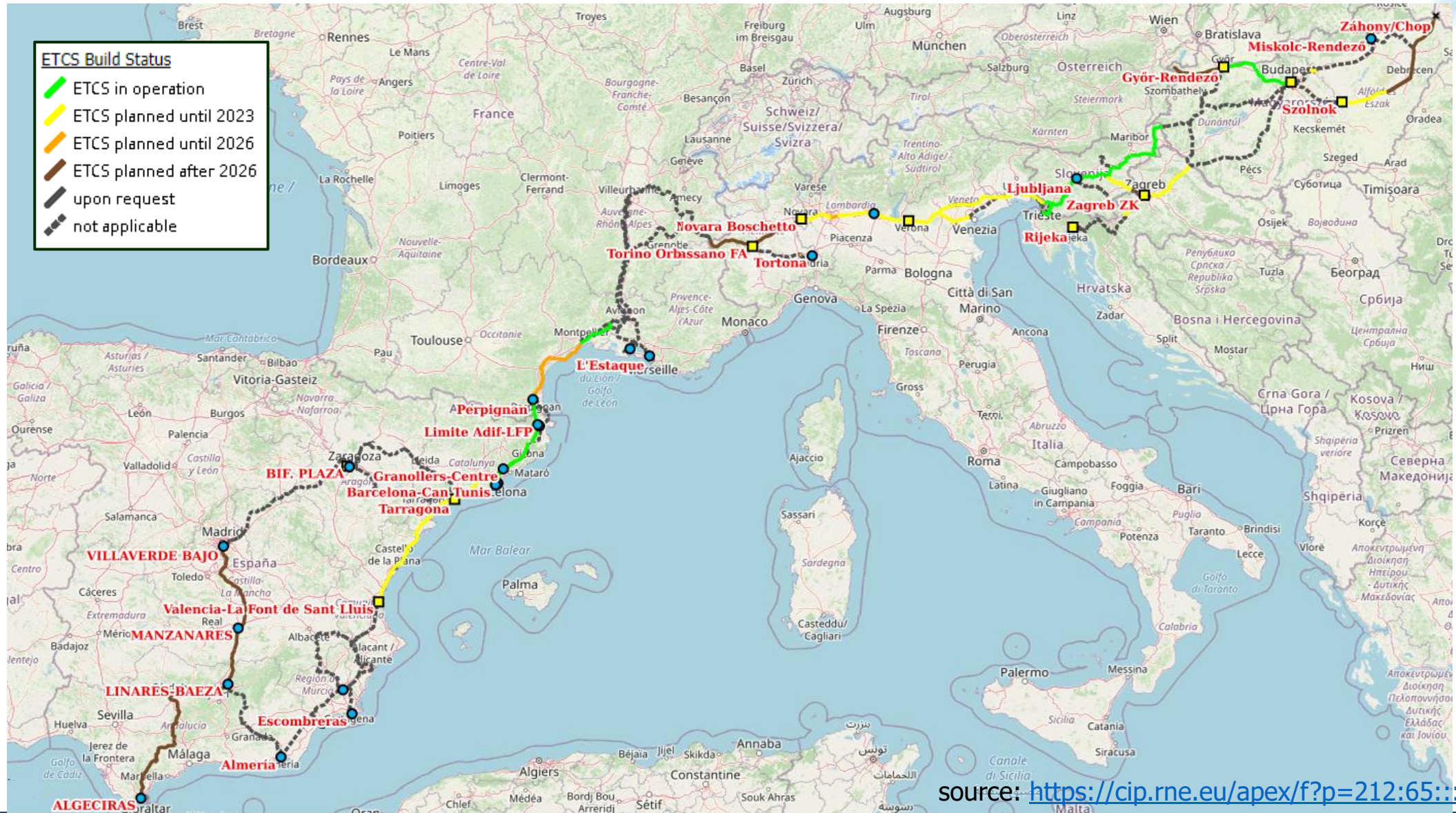
AGENDA

- An update: progress in ERTMS installation along Med RFC
- WG Organization
- Status at border lines
- News
- Overcoming barriers to ERTMS interoperability on international networks
- How ERTMS can improve cross-border freight efficiency

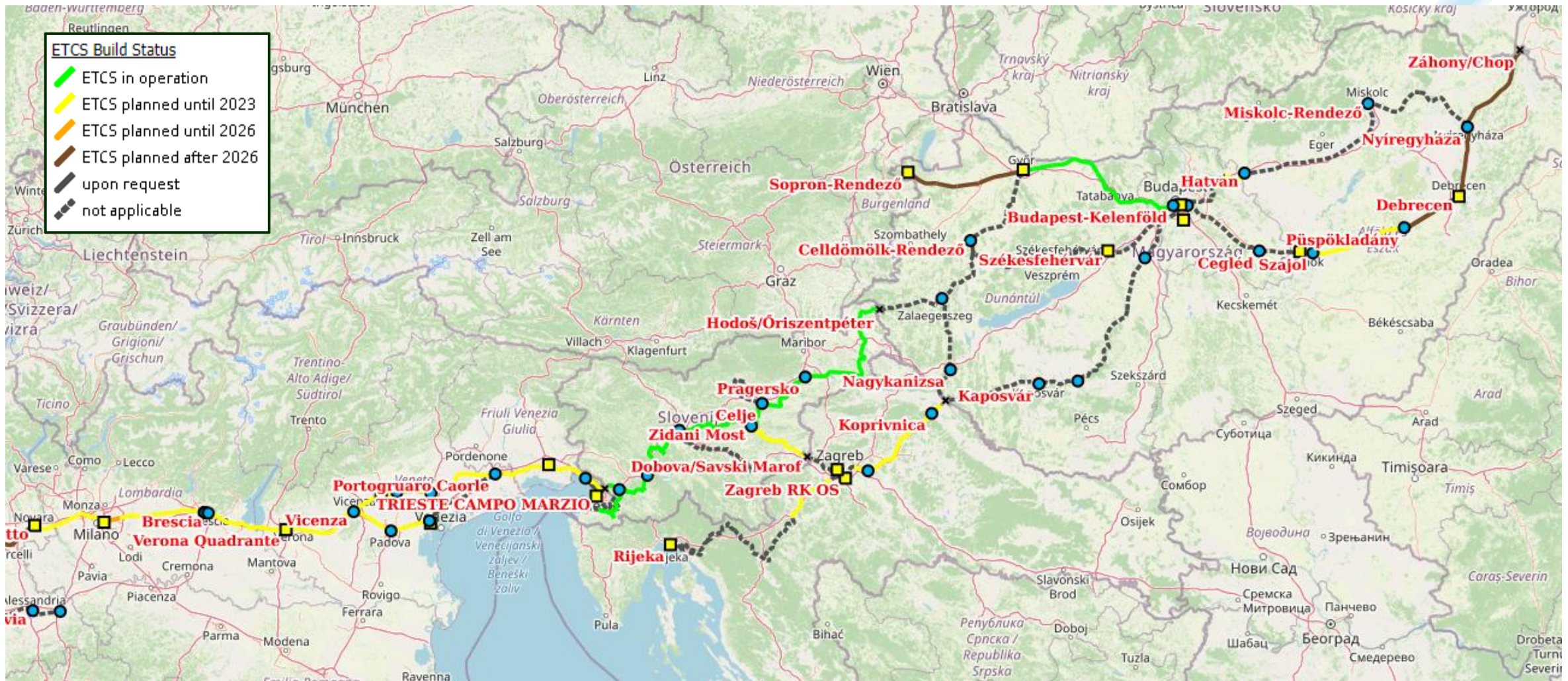
General map RFC Med



Overall status ETCS implementation



ETCS Eastern part of the Corridor



source: <https://cip.rne.eu/apex/f?p=212:65:::>

ETCS Western part of the Corridor



source: <https://cip.rne.eu/apex/f?p=212:65:::>

ETCS in Spain on Med RFC



Mixed Traffic Line (Barcelona-Figueres-Perpignan (FR)).

ERTMS Level 1.

- Section Perpignan – Figueres Vilafant LFP: delivery in service in February 2009.
- Section Figueres Vilafant – LFP: In service since December 2010.
- Section Bif. Mollet – Figueres: In service since December 2012.
- Section Barcelona Sants – Bif. Mollet: In service since April 2013. (only passenger trains).

ERTMS Level 2.

- Section Barcelona Sants – Figueres Vilafant: Pending completion of the ERTMS L2 works. Date scheduled: October 2021,
- Section Figueres Vilafant – Perpignan (FR - LFP): Pending migration towards version 2.3.0d.

ETCS in Spain on Med RFC



Conventional Line (Tarragona - Vandellós).

ERTMS Level 1.

- Section Camp de Tarragona – La Boella (double track, UIC): Put in service in January 2020.

- Section La Boella – L'Hospitalet (double track, 1668 mm): Put in service in January 2020.

ETCS in Spain on Med RFC



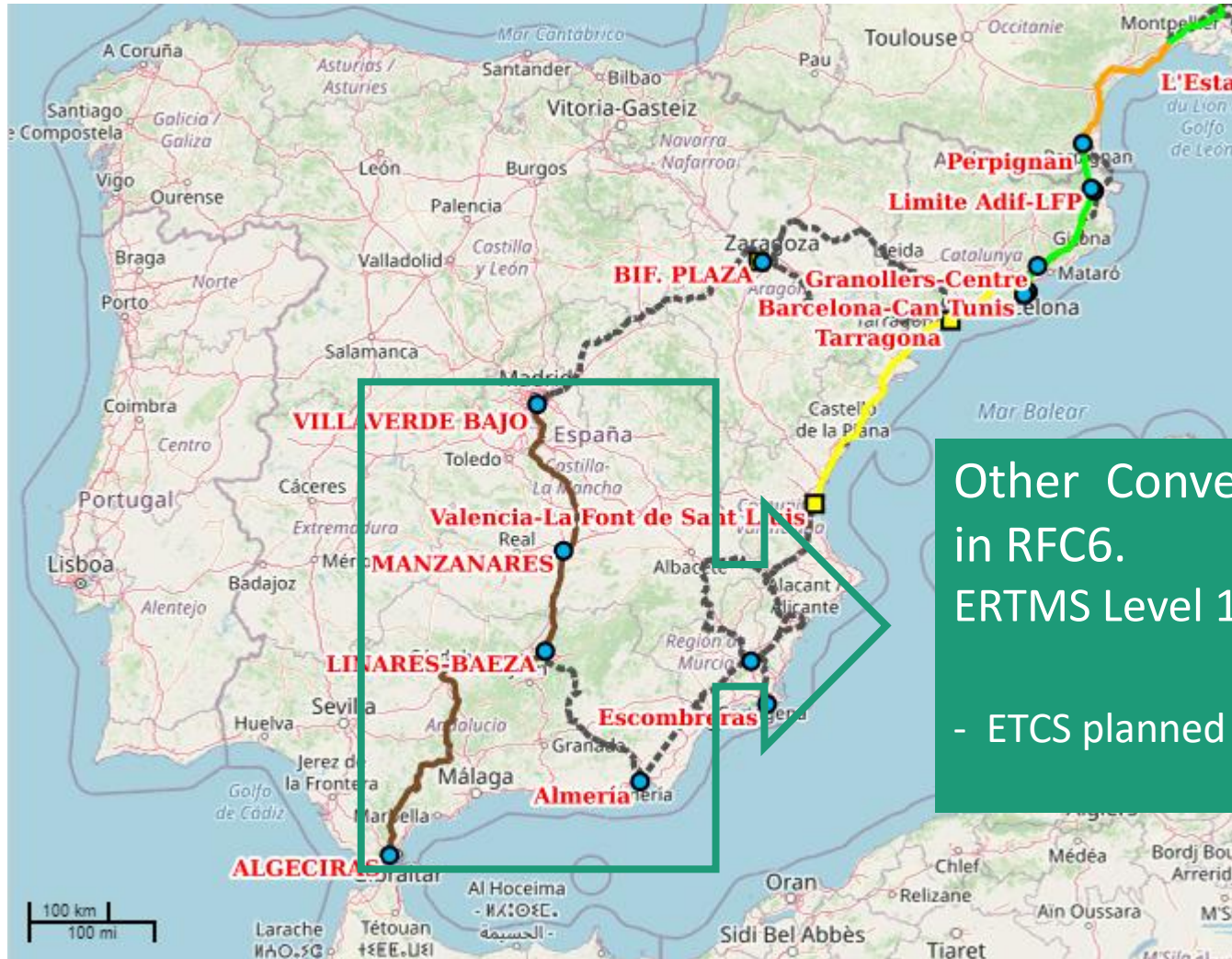
Conventional Line (Tarragona - Vandellós).

ERTMS Level 1.

- Section Vandellós – Castellón: Date scheduled for completion of the works pending completion of the track gauge change.

- Section Castellón – Valencia (third rail): Date scheduled for completion of the works pending completion of the third rail works (second track Sagunto – Castellón section).

ETCS in Spain on Med RFC



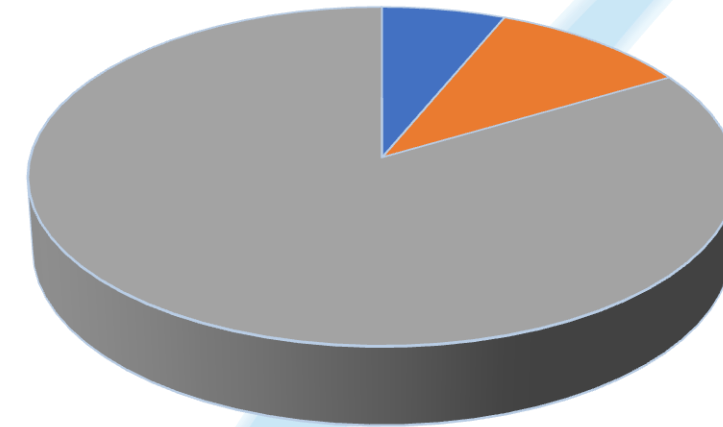
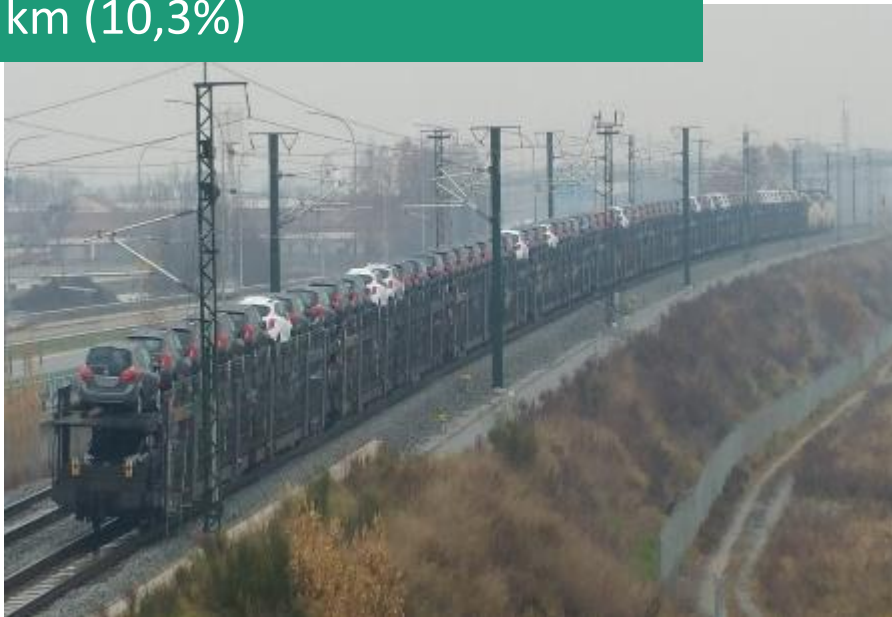
Other Conventional Lines
in RFC6.
ERTMS Level 1.

- ETCS planned after 2023.

ETCS in Spain on Med RFC

ETCS RFC6 main figures:

- RFC6 Total length: 3.397 km.
- ETCS in operation: 213 km (6,3%)
- ETCS planned by 2023: 350 km (10,3%)



- ETCS in operation:
- ETCS planned by 2023:
- ETCS planned after 2023:

ETCS in Spain on Med RFC

ETCS RFC6 Barcelona – Figueras mixed traffic section:

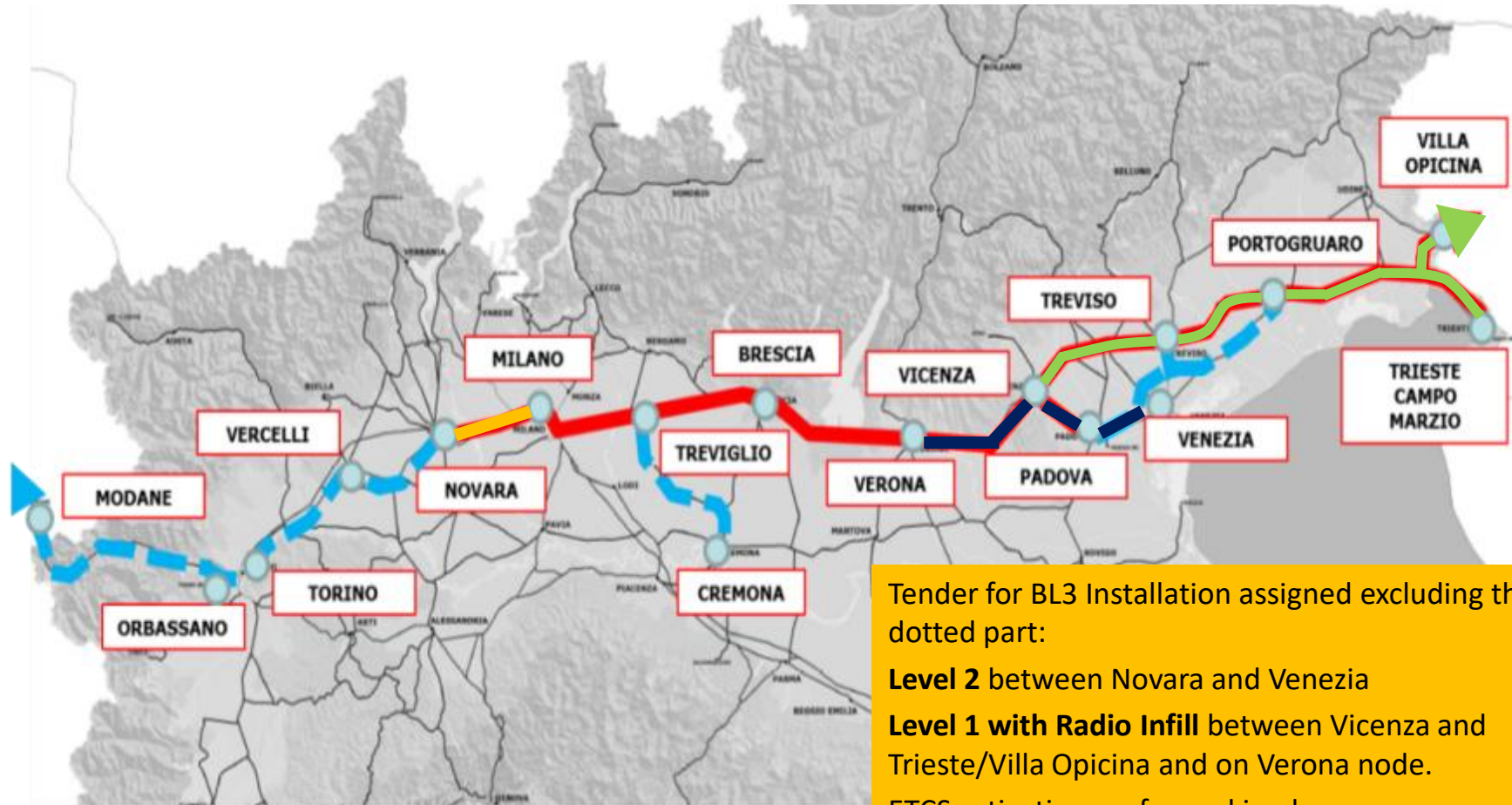
- Total trains per year: > 12.500:
 - Freight trains: > 1.500 (12 %)
 - Passenger trains: > 11.000 km (88 %)



ETCS in France on Med RFC

| | |
|--|--|
| [LFP] Figueres Villafant – Le Soler (Perpignan) | Level 1 – 2.3.0d In operation |
| Le Soler (Perpignan) – Montpellier | Beyond 2023 |
| Montpellier – Nîmes (CNM) | Level 1 – 2.3.0d In operation |
| Nîmes – Avignon - Lyon | Beyond 2023 |
| Lyon - Chambéry – Modane | Beyond 2023 |
| Marseille – Avignon | Beyond 2023 |

ETCS in Italy on Med RFC



Tender for BL3 Installation assigned excluding the dotted part:

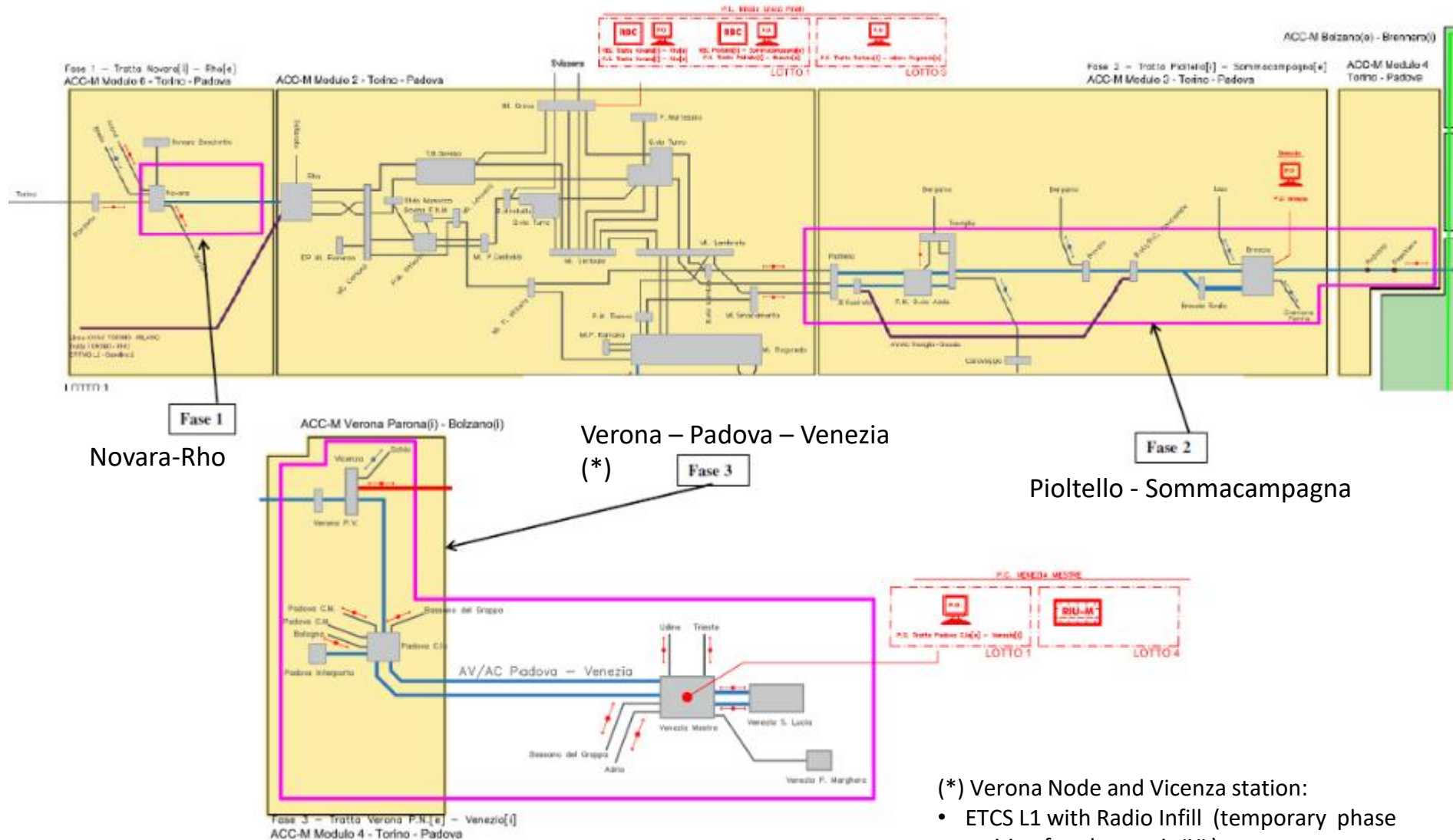
Level 2 between Novara and Venezia

Level 1 with Radio Infill between Vicenza and Trieste/Villa Opicina and on Verona node.

ETCS activation performed in phases.

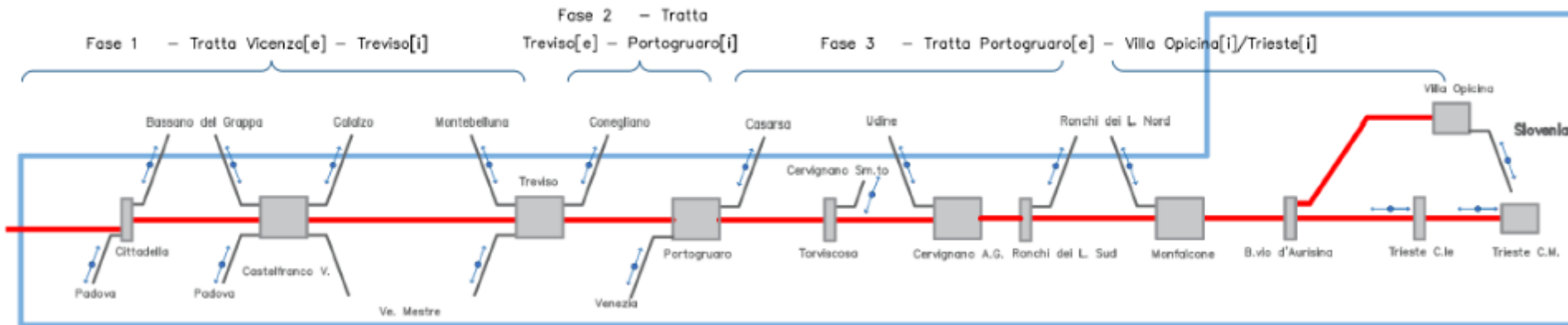
End of activation: 2022

Focus on Novara – Padova – Venezia (ETCS L2)



- (*) Verona Node and Vicenza station:
- ETCS L1 with Radio Infill (temporary phase waiting for electronic IXL)

Focus on Vicenza – Treviso – Trieste/Villa O.



ETCS Level 1 with Radio Infill

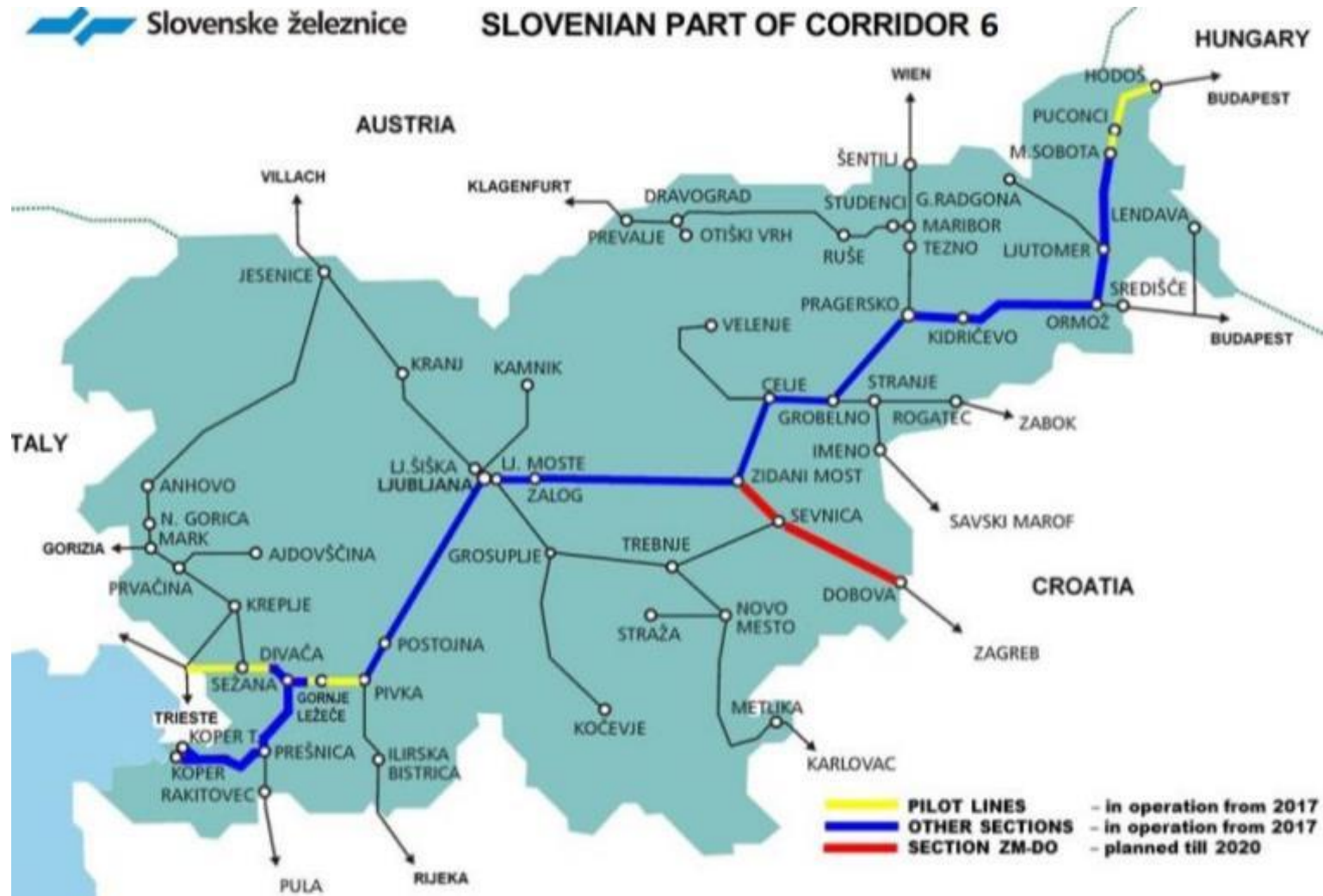
RIU-M placed at Venezia

Type of IXL:

- Electronic IXL (ACCM): Treviso – Portogruaro and Ronchi D.L. – Monfalcone
- Electromechanical IXL (ACEI): other stations (*)

(*) San Pietro in Gù and Istrana (between Vicenza and Treviso) have electronic IXL (ACC Stand alone)

ETCS in Slovenia on Med RFC



ETCS in Slovenia on Med RFC

Mediterranean Corridor in Slovenia covers 464 km of track and 61 railway stations

- ❑ 158 km (38,2 %) is single track and 255 km (61,8 %) is double track

In operation from 2017:

Pilot lines (yellow) ETCS L1 B2 2.3.0.d FS

- ❑ border ITA – Pivka (without Divača): 25 km
- ❑ Murska Sobota – border HUN: 31 km

Other sections (blue) ETCS L1 B2 2.3.0.d FS

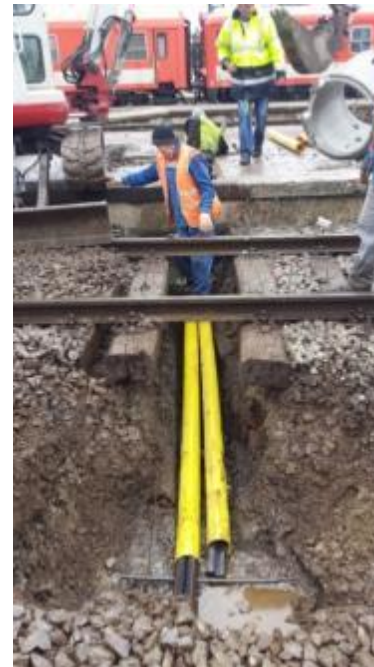
- ❑ 5 sections cross SLO: 357 km

Planned til 2020:

Section ZM –DO (red) ETCS L1 B3 set 2 FS

- ❑ 1 section Zidani Most – border CRO: 51 km

ETCS in Slovenia on Med RFC

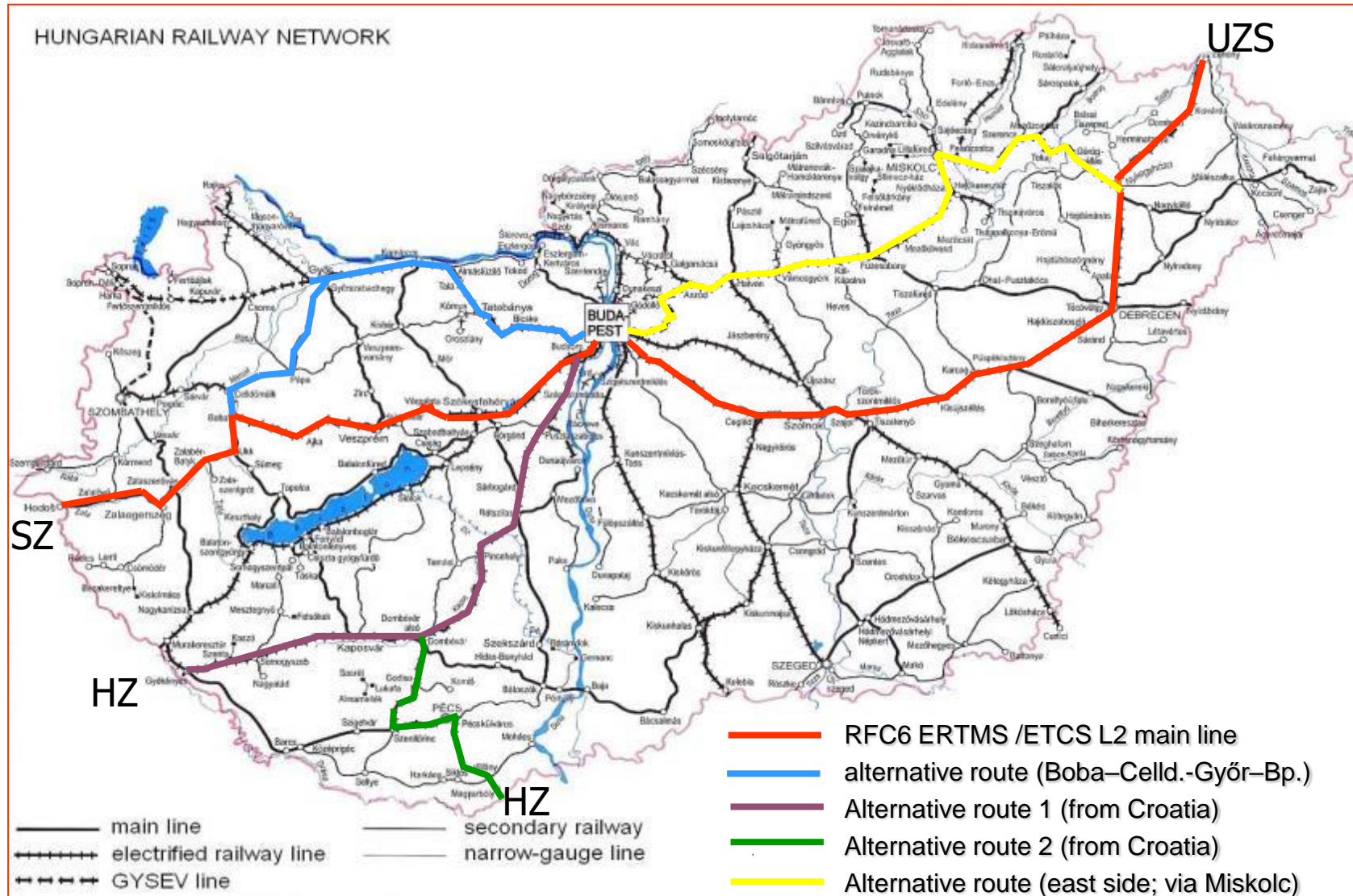


ETCS in Croatia on Med RFC

ANNEX ETCS Status year 2023:

- railway line M102 Zagreb MS – Dugo Selo, section Sesvete – Dugo Selo and railway line M201 SB – Botovo – Dugo Selo, section Križevci (incl.) – Dugo Selo will be equipped with ETCS level 1 Baseline 2.3.0.d.
- railway line M201 SB – Botovo – Dugo Selo, section SB – Križevci and M202 Zagreb MS – Rijeka, section Hrvatski Leskovac – Karlovac will be equipped with ETCS level 1 Baseline 3.

ETCS in Hungary on Med RFC



ETCS in Hungary on Med RFC

ETCS baseline: 2.3.0.d.

Main line, west & south parts:

- Hódos (Slovenian border) – Óriszentpéter – Boba*
 - Thales, in operation
- Boba (incl.) – Székesfehérvár (excl.)
 - Estimated ready: 2024.
- Székesfehérvár station
 - Thales, in trial operation (funct. modifications expected)
- Székesfehérvár – Budapest (Ferencváros)
 - Siemens, in operation (funct. modifications expected)
- To Croatia (up to 2030); not tendered yet.

* L1&L2 section between Óriszentpéter and Zalacséb. L1 used as fall-back.

ETCS baseline: 2.3.0.d.

Main line, east parts:

- Budapest (Ferencváros) – Monor (incl.)
 - Thales, estimated ready: 2022.
- Monor (excl.) – Szolnok (excl.) - Szajol (incl.)
 - Siemens, estimated ready: 2022.
- Szolnok station: ETCS L1, up to 2022.
- Szajol (excl.) – Püspökladány (incl.)
 - Thales, estimated ready: 2022.

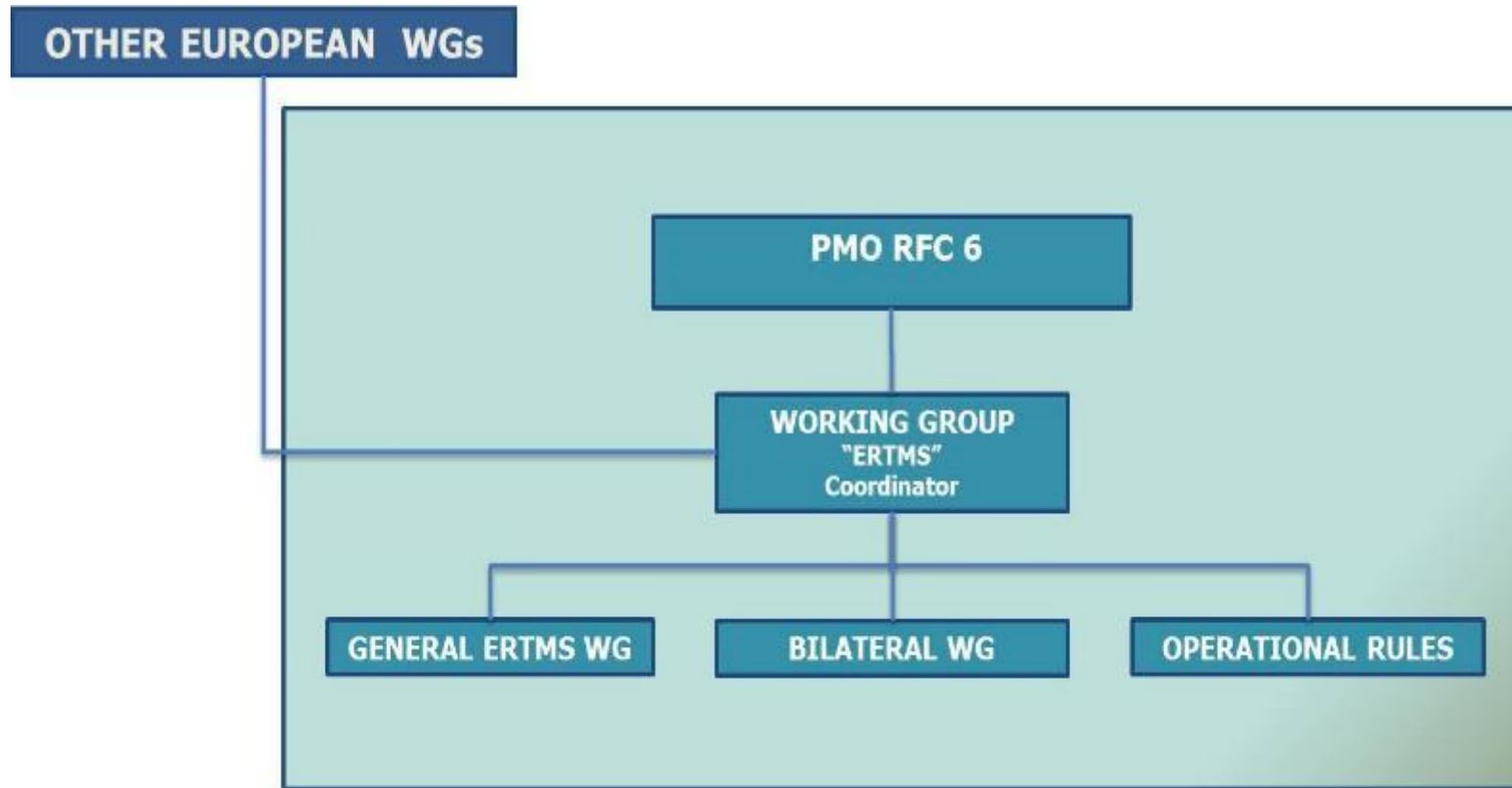
Up to 2025 (not tendered yet):

- Püspökladány – Debrecen – Nyíregyháza – Záhony border (Ukraine)

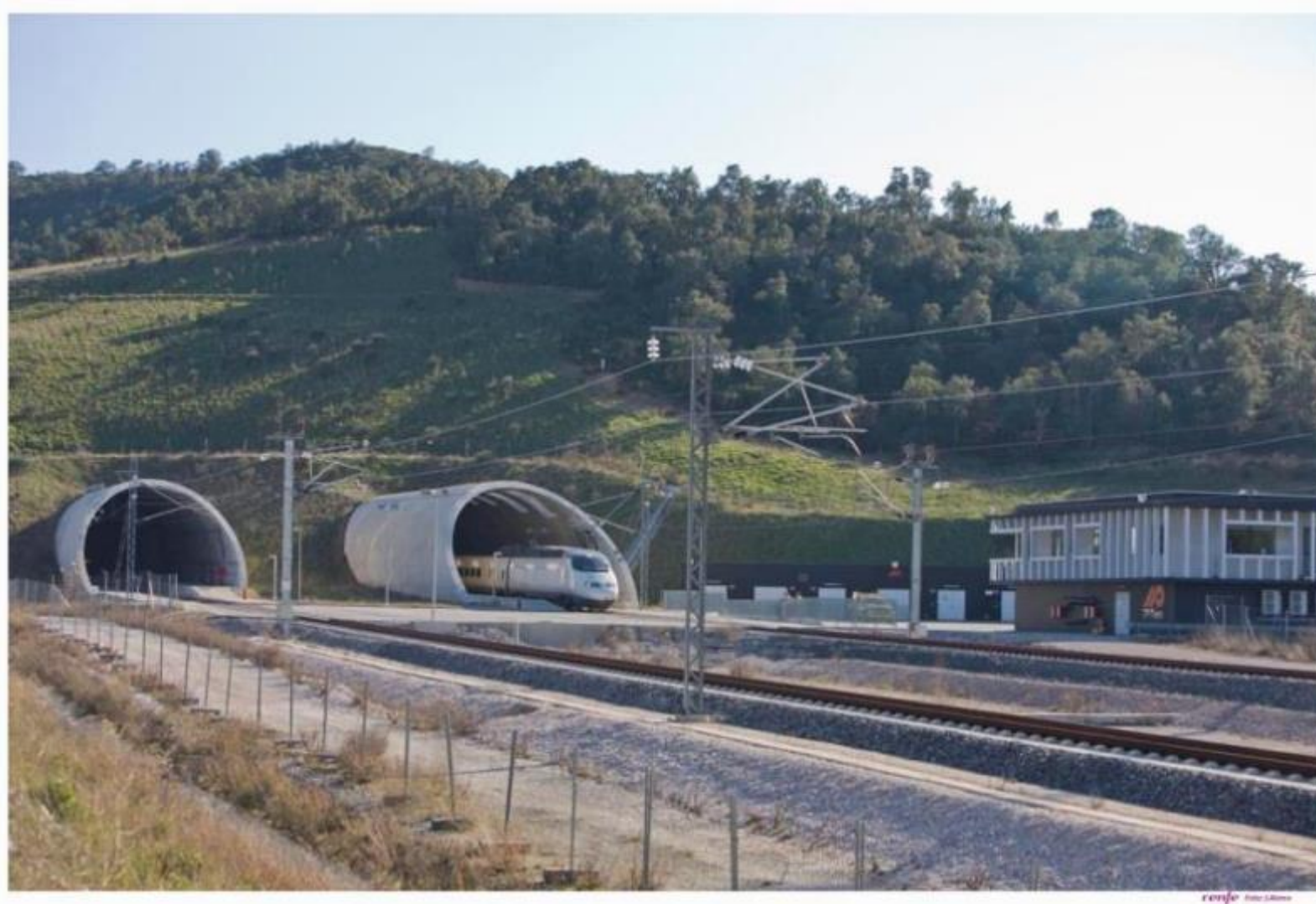
A photograph of a railway track with overhead power lines and a wooden sleepers in the foreground. The text "day after day ERTMS will become reality!" is overlaid in white.

day after day ERTMS will
become reality!

ERTMS WG Organization



Border lines – Spain / France



Border lines – Spain / France



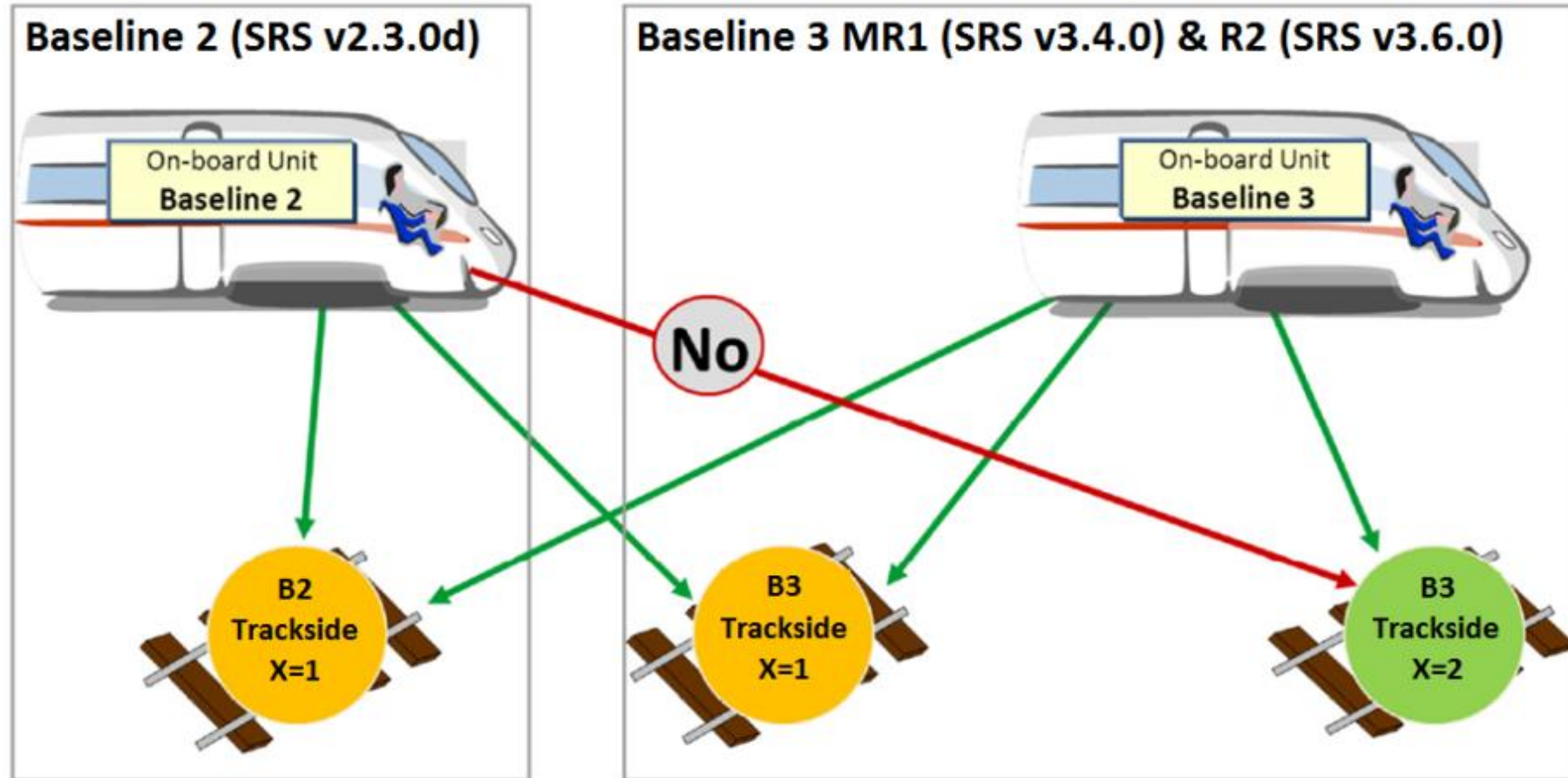
Border lines – Slovenia / Hungary



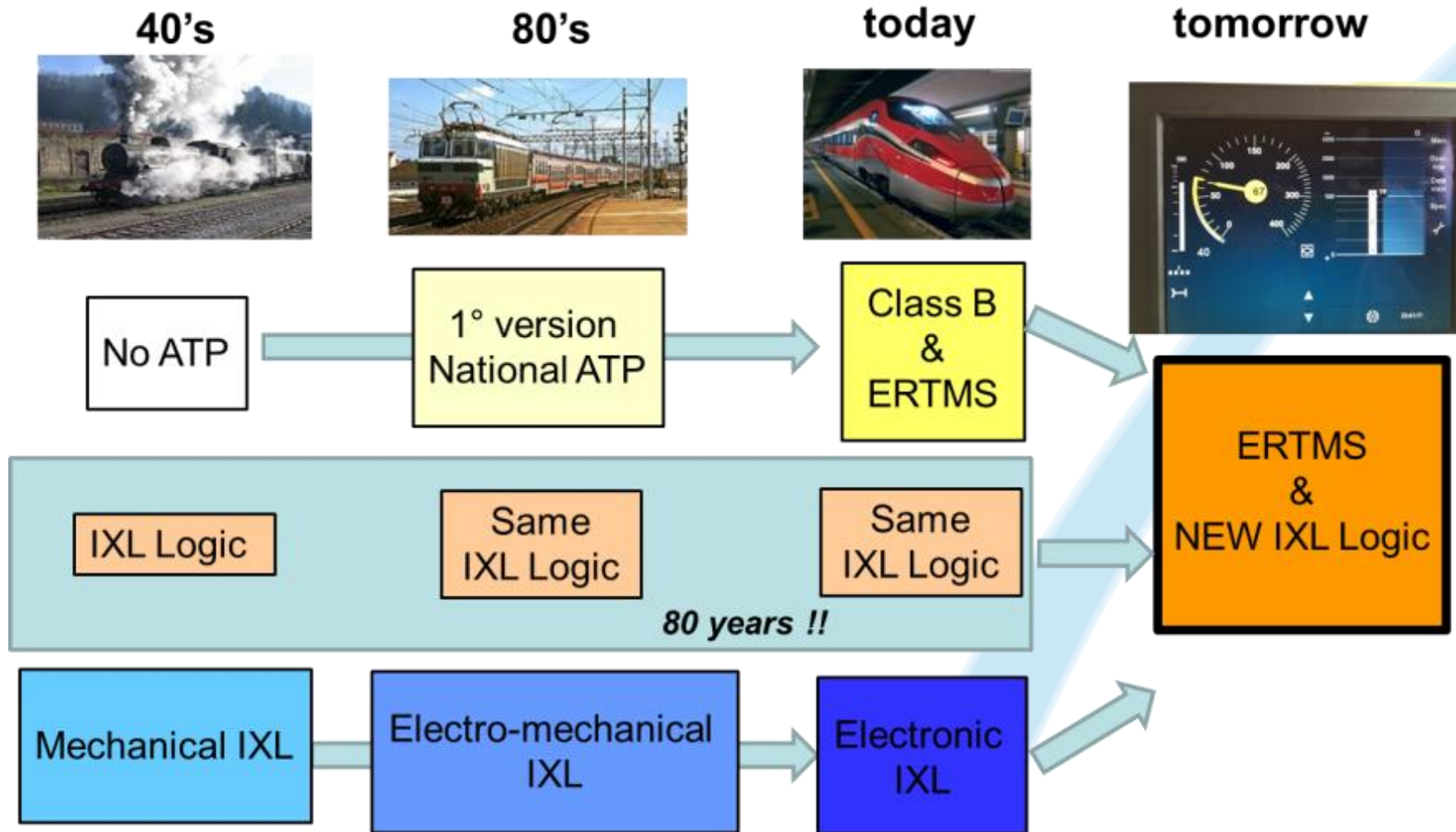
Border lines – Slovenia / Hungary



Interoperability



Interoperability



Shunting operation

USING ETCS FOR IMPROVE SHUNTING OPERATIONS

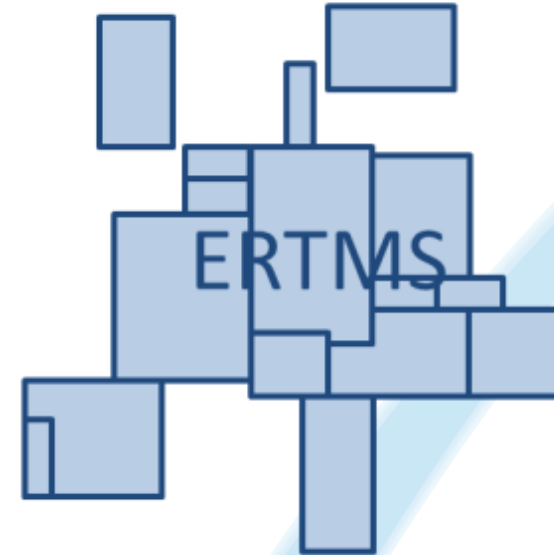
ERTMS is Ready For Europe – Overcoming the Obstacles

Fragmented national railway systems

- National supplier oligopolies (captive)
 - obsolescence
- Cross-border:
 - change of locomotive
 - multiple systems fitted
- Limitations in terms of functionality and safety



Single European Railway Area



Clear goals

Seamless train operation without borders (caused by signalling)


At best economic conditions for freight traffic!

News

- PERFORMED DYNAMIC ETCS DEMO @HUNGARIAN-SLOVENIAN BORDER
- SIGNED MoU ERTMS BETWEEN ITALY AND SLOVENIA
TRAINS RFI EQUIPPED WITH ERTMS WILL PERFORM INTEGRATION TESTING IN SLOVENIA
- STARTED WORKING GROUP OPERATIONAL ERTMS
- UPDATE OF THE IMPLEMENTATION PLAN FOR THE ERTMS PART



ERTMS is a benefit for operators!



thank you for your attention

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