UN Economic Commission for Europe
74th Working Party on Transport Statistics

Geneva, 15–17 May 2023

Items 7b and 7c: Toward a visualisation of European rail network characteristics and traffic on maps

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Content

- **Every 5-years Annex V (EU Regulation) on rail traffic by network segments and documentation on rail network**
- **Improving consistency with ERA rail network data on line-km**
- **Building or completing the description of rail networks of Annex V**
- **A map for rail traffic**
- **An interactive map including rail network characteristics**

Annex V of EU Regulation (EU) 2018/643

ANNEX V

STATISTICS ON TRAFFIC FLOWS ON THE RAIL NETWORK	
List of variables and units of measurement	Goods transport: — number of trains Passenger transport: — number of trains Other (service trains, etc.) (optional): — number of trains
Reference period	One year
Frequency	Every five years
List of tables with the breakdown for each table	Table V1: goods transport, by network segment Table V2: passenger transport, by network segment Table V3: other (service trains, etc.), by network segment (optional)
Deadline for transmission of data	18 months after end of reference period
First reference period	2005
Notes	1. Member States shall define a set of network segments to include at least the rail trans-European network (TEN) on their national territory. They shall communicate to Eurostat: — the geographical coordinates and other data needed to identify and map each network segment as well as the links between segments, — information on the characteristics (including the capacity) of the trains using each network segment. 2. Each network segment which is part of the rail TEN shall be identified by means of an additional attribute in the data record, in order to enable traffic on the rail TEN to be quantified.

In the notes that accompany the data and concern network segments:

- Including at least the “trans-European network (TEN)”: Core or Comprehensive?
- No indication on coordinates (system of projection, degrees-minutes-seconds?).
- No indication on which characteristics, neither under which format.

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First time we delivered an Excel “template”

Minimum according to annex V on "a set of network segments"								
Country	Network segment identifier	From	To	From latitude	From longitude	To latitude	To longitude	Ten Flag

Other wishable characteristics for Common Questionnaire						
Length in km	Electrified segments	Type of current (AC/DC, frequency, voltage)	Passenger only / freight only / passenger and freight	Number of tracks	Track gauge	dedicated high speed / upgraded high speed / conventional

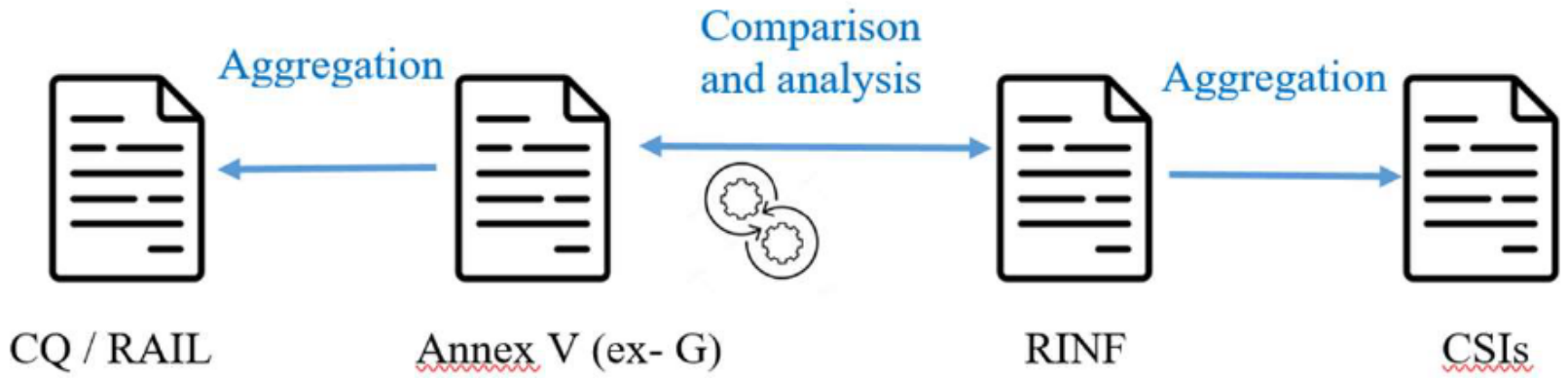
Scope characteristics for inclusion / exclusion							Other characteristics		
separated network	temporarily not in use	permanently not in use	light urban	touristic lines	private lines	Light rail occ. used for heavy rail	UIC_line_code	AGC line number	AGCT line number

- Geographical coordinates in decimal degrees.
- Harmonization of other code lists (inspired by CQ).
- Countries encouraged to provide full network (rather than TEN only).

Comparison of Eurostat figures with RINF and CSIs

- International organisations have always had consistency issues on rail network data, such as length of lines and length of tracks. ERA has launched a task force on data quality (see dedicated presentation under item 11).
- The Register of Infrastructure (RINF) managed by ERA (along with Common Safety Indicators (CSIs)) includes length, technical characteristics and geographical coordinates of “sections of lines” (~ “network segments” of Annex V). RINF is therefore a useful source of comparison.
- The ideal process for full consistency of network data would be:

Figure 1 – Comparison and analysis of Eurostat and ERA rail statistics



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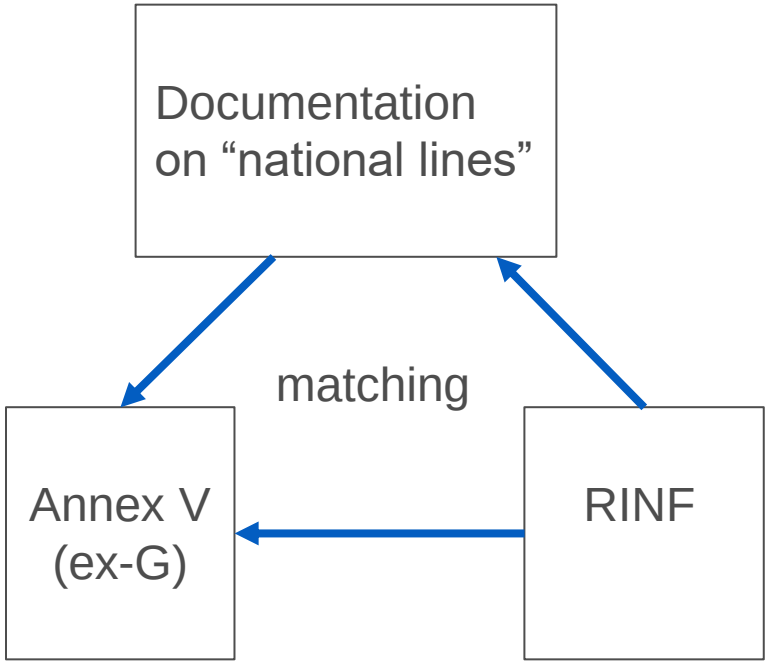
Annex V and RINF: example of comparison

Country	Network segment identifier	From	To	national line in RINF	From	To	control line-km from NET_SEGMENTS	control line-km from RINF	difference	Comments
LT	LTS10021	Gaižiūnai	Palemonas	Gaižiūnai-Palemonas	Gaižiūnai	Palemonas	26,0	25,4	0,6	
LT	LTS10022	Kazlų Rūda	Šeštokai	Kazlų_Rūda-Mockava-PL	Kazlų Rūda	Šeštokai	57,0	57,0	0,0	
LT	LTS10023	Šeštokai	Mockava	Kazlų_Rūda-Mockava-PL	Šeštokai	Mockava	8,0	7,5	0,5	
LT	LTS10024	Mockava	State border	Kazlų_Rūda-Mockava-PL	Mockava	Valstybės siena	14,0	14,3	-0,3	
LT	LTS10025	Radviliškis	Pagėgiai-State border.	Radviliškis-Pagėgiai-RU	Jonaitiškiai	Viduklė	148,0	95,6	**52,4**	**a gap of 50 km in RINF, between Viduklė and Tauragé?**
				Radviliškis-Pagėgiai-RU	Tauragė	vals siena Pagėgiai				
LT	LTS10026	Radviliškis	Panevėžys	Radviliškis-Rokiškis-LV	Radviliškis	Panevėžys	54,0	54,0	0,0	
LT	LTS10027	Panevėžys	Rokiškis	Radviliškis-Rokiškis-LV	Panevėžys	Rokiškis	85,0	84,8	0,2	
LT	LTS10028	Rokiškis	Obeliai-State bord	Radviliškis-Rokiškis-LV	Rokiškis	Valstybės siena	29,0	29,2	-0,2	
LT	LTS10029	Vilnius	Stasylos-State bor	Vilnius-Stasylos-BY	Vilnius	Valstybės siena	49,0	45,6	3,4	
LT	LTS10030	N.Vilnia	Turmantas-State b	Naujoji_Vilnia-Turmantas-LV	Naujoji Vilnia	Valstybės siena	139,0	138,9	0,1	
LT	LTS10031	Švenčionėliai	Utena	Švenčionėliai-Utena	Švenčionėliai	Utena	47,0	48,2	-1,2	
LT	LTS10032	Lentvaris	Marcinkonys-State	Lentvaris-Marcinkonys-BY	Lentvaris	Valstybės siena	99,0	98,3	0,7	
LT	LTS10033	Sen.Trakai	Trakai	Sen.Trakai-Trakai	Sen.Trakai	Trakai	4,0	3,7	0,3	
LT	LTS10034	Šeštokai	Alytus	Šeštokai-Alytus	Šeštokai	Alytus	38,0	38,1	-0,1	
LT	LTS10035	Jonava	Rizgonys	Jonava-Rizgonys	Jonava	Rizgonys	23,0	22,7	0,3	
LT	LTS10036	Kretinga	Skuodas-State bor	Kretinga-Skuodas-LV	Kretinga	Valstybės siena	52,0	51,9	0,1	
LT	LTS10037	Kužiai	Mažeikiai-Bugenia	Kužiai-Mažeikiai-Bugeniai-LV	Kužiai	Valstybės siena	91,0	91,1	-0,1	
LT	LTS10038	Šilėnai	Jonaitiškis				8,0	0,0	**8,0**	**a gap in RINF?**
LT	LTS10039	Radviliškis	Petrašiūnai	Radviliškis-Petrašiūnai	Radviliškis	Petrašiūnai	42,0	43,0	-1,0	
LT	LTS10040	Pagėgiai	Rimkai	Klaipėda-Pagėgiai	Rimkai	Pagėgiai	77,0	77,3	-0,3	
LT	LTS10041	Akmenė	Karpėnai	Akmenė-Alkiškiai(Karpėnai)	Akmenė	Karpėnai	18,0	18,3	-0,3	
							1.776	**1.709**	66,7	
				Kyviškės-Valčiūnai	Kyviškės	Valčiūnai		24,3		**missing in Annex V?**
				Vilnius-Klaipėda	Šilainiai	Sodai		2,2		redundant with Silenai - Sodai?
				Kaišiadorys-Kaunas-Kybartai-RU	Jiesia	KazlųRūda		27,6		**missing in Annex V?**
								1.763		**total RINF**
							1.911			
							in CQ			

Completing Annex V rail network with RINF

- Sometimes the documentation of Annex V was incomplete or not recently updated...



- BE: geographical coordinates + all characteristics
- DE: all characteristics (in progress)
- FR: some geographical coordinates or names of starting or ending points
- LU: scope and type of current
- NL: length of lines
- check of “high speed” sections
- …

Building (Annex V) rail network description (w/o RINF)

When Annex V nor RINF data exist, other public sources (e.g. The Network Statement of Directive 2012/34/EU) can be used to build the Network Segments description (needed in Annex V).

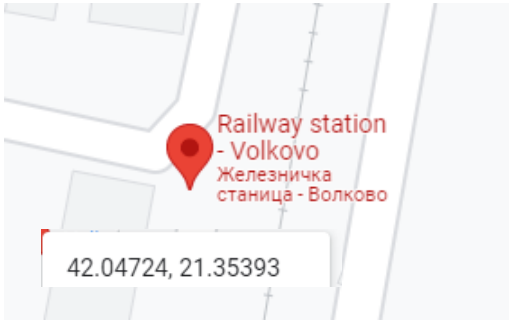
Network statement in 2021 from Directive 2012/34/EU)

LINE: DG VOLKOVO - SKOPJE (TRUBAREVO PRIEMNA)

SERVICE PLACES	Status	Open for		Distance in km		
		Passengers	Goods	Partial	Combined	Real
6	7	8		9		
Km. 313+510= gr. MZ	DG				0.0	313.5
Blatse	Halt	✓		0.3	0.3	313.8
Volkovo	St	✓	✓	11.5	11.8	325.3
Novo Selo	Halt	✓		1.8	13.6	327.1
Gjorce Petrov	St	✓	✓	3.3	16.9	330.4
Skopje Sever	St	✓	✓	6.5	23.4	336.9
Zelezarnitsa	Halt	✓		2.8	26.2	339.7
Skopje	St	✓	✓	4.9	31.1	344.6
Skopje Sever	St		✓		23.4	336.9
Madzari	St		✓	6.4	29.8	343.3
Trubarevo Priemna	St		✓	3.4	33.2	346.7

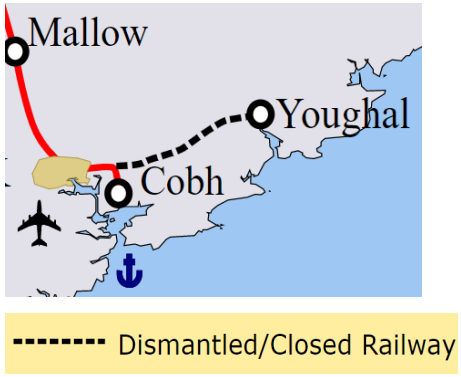
Description of “national lines”, list of stations with cumulated length of line, most of characteristics

Google Map



Geographical coordinates

Public documentation on the web



Control of exact scope of operated lines

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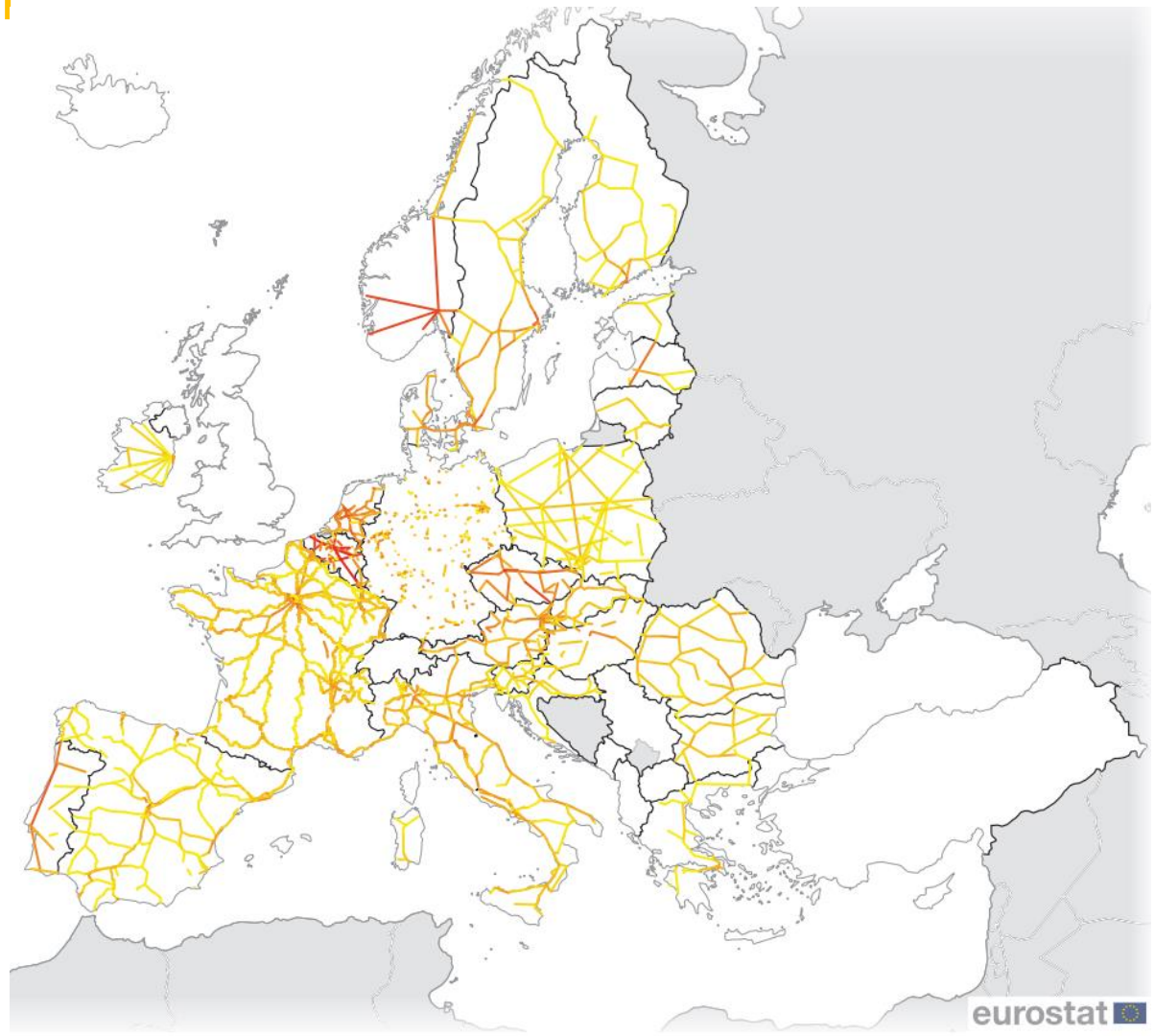
A map for rail traffic



Rail_data
PASS_TOTAL

- This map (on passenger trains traffic on the TEN network), is intended for the regional yearbook (to be updated).
- The situation of Germany (discontinuous TEN segments) has been solved since.
- We do not have Irish nor Norwegian “network segments” but “commercial routes”.
- We are also waiting for Belgian corrected data.

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An interactive map for rail network characteristics

- Annex V for the year 2020 and up-to-date RINF (see map below) as support for visualisation of Eurobase tables on rail infrastructure:

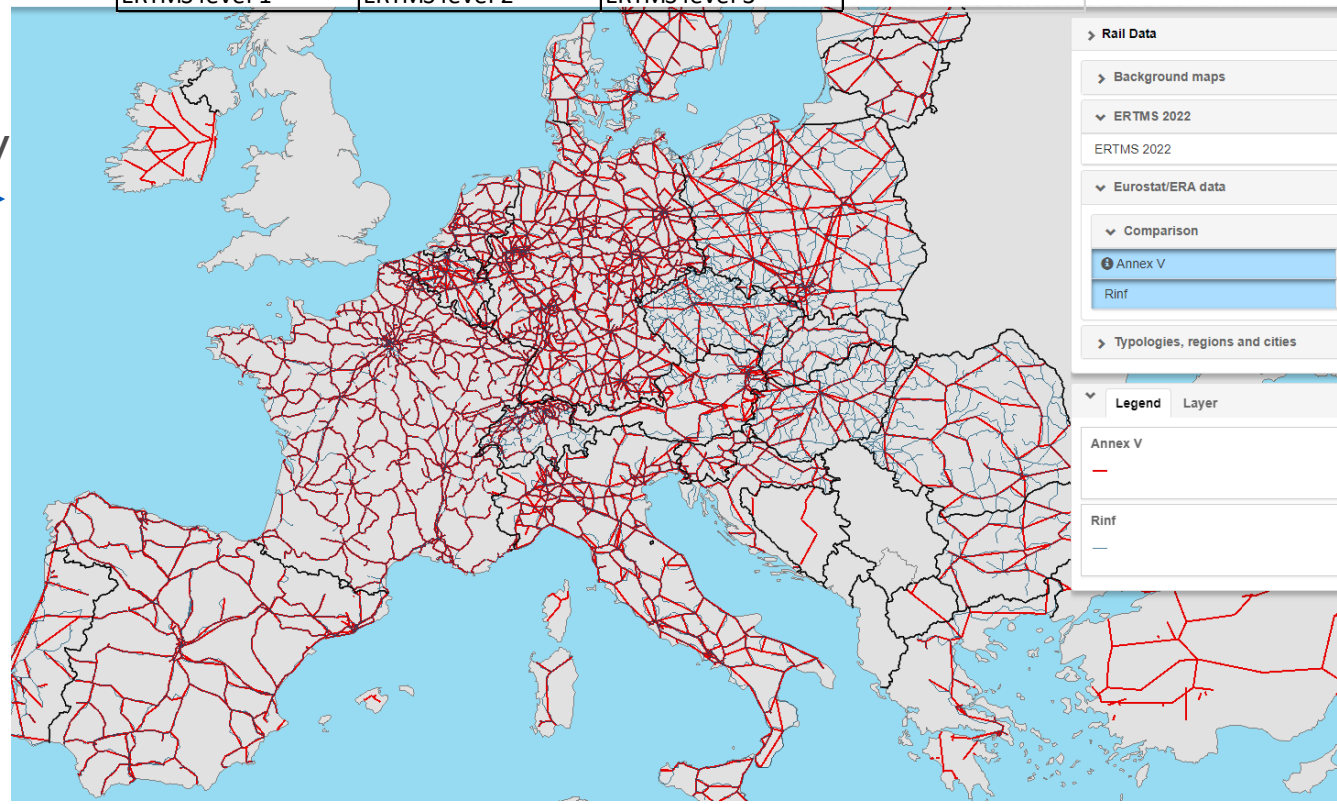
TEN network	not-TEN network		
Electrified	Not electrified		
50 Hz 25 kV	16,7 Hz 15 kV	DC 3 kV	DC 1500 V
Single track	Double track or more		
Standard gauge	Large gauge	Narrow gauge	
Dedicated high speed	Upgraded high speed	Conventional	
ERTMS level 1	ERTMS level 2	ERTMS level 3	

Eurobase tables

- Railway transport infrastructure (rail_if)
  - Railway transport - length of tracks (rail_if_tracks) UPDATED
  - Railway transport - length of lines, by number of tracks (rail_if_line_tr) UPDATED
  - Railway transport - length of lines, by track gauge (rail_if_line_ga) UPDATED
  - Railway transport - length of lines, by nature of transport (rail_if_line_na) UPDATED
  - Railway transport - length of electrified lines, by type of current (rail_if_electri) UPDATED
  - Railway transport - length of lines, by maximum speed (rail_if_line_sp) UPDATED
  - Length of railway lines equipped with the railway traffic management system by type of signalling (source: ERA) (rail_if_traff)

Annex V

RINF



Summary: from incomplete tables to maps

- **Annex V with geographical coordinates => a map (or 2 maps) on rail traffic in 2020**
- **Annex V and RINF with geographical coordinates => improved consistency at detailed level leads to consistency of aggregates (used to fill-in CQ)**
- **Annex V with geographical coordinates and characteristics => an interactive map of rail network characteristics (from Common Questionnaire)**
- **RINF with geographical coordinates and characteristics => an interactive map for rail network safety equipment (ERTMS) data provided to Eurostat by ERA**

Work is in progress…

Thank you

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