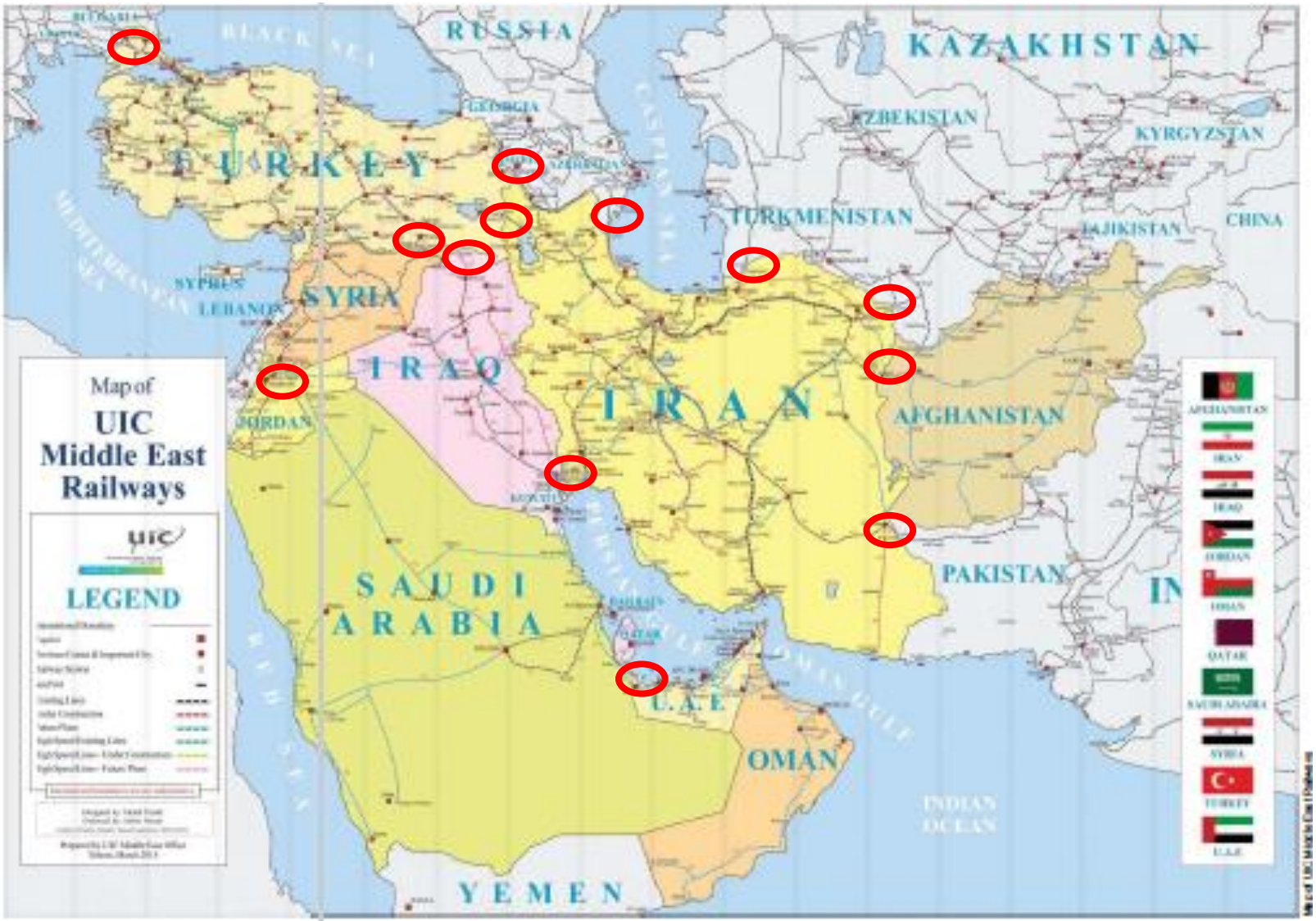
IMPROVEMENT OF BORDER CROSSINGS AND REDUCING STOPS AT BORDERS

Operational measures: use case on braking harmonisation

DB Cargo AG | Sven Seligmann | L.CBS 32 | Oct. 14 2020

There are several border stations at ME Corridors where additional efforts for border procedures can be avoided



Why do we strive to minimize border stops?

A

Additional Efforts

Costs for
- Staff
- Locomotives
- Infrastructure (special sidings for examination and buffering of trains)

B

Time losses

- Our customer expect short delivery times
- We earn money only when trains are running, not when they stop at borders

Because they cause

D

Competitive Disadvantages

Our competitors ship and truck don‘t have to stop at borders to make technical examinations, switch their brakes or calculate and print new braking sheets

C

Provision of staff in unsuitable locations

Border stations are often far away from the rest of stations where staff is provided. This makes the allocation of staff difficult and expensive.

Why do we stop at borders and are there already solutions?

Different Infrastructure Systems

In Europe there are
- 5 different elctrification systems
- 3 different gauges and
- about 20 train protection systems

→ **Multi-system locomotive (except gauges)**

No trust in previous examinations

- Every RU is responsible for the safe conduct of the train
- Rules for examination are very similar or the same (GCU App. 9)

→ **ATTI**
(Agreement on freight Train Transfer Inspections)
https://uic.org/special-groups/atti/

Drivers are not allowed to drive on other infrastructure

Issues: Signalling, Language, Rules

→ **European Driver License**

Different braking rules

- Almost each country/RU has own rules
- Same train has different brake performances
- Change G/P positions at the border
- Create new brake sheet at border

→ **We need to develop an interoperable braking scheme**

DB Cargo Use Case 1:
Common Braking Rules on Rail Freight Corridor (RFC) 1

The main objective is to develop pilot projects along the Rhine- Alpine Corridor. These pilots will overcome the issue of the current different national braking sheets and braking performance calculations, which hinder today interoperable seamless freight train operations on the corridor Rhine-Alpine (Rail Freight Corridor 1 (RFC1)).

A first study concerning „Braking“ has already being carried out

Initial “Braking” situation

1. National specifications	Identified and analyzed
2. Needs for changes	Defined and agreed
3. Responsibilities	Analyzed and defined
Result	Requirement for changes along the corridor RFC 1 have been handed over to RUs, IMs and Ministries **5 Trains already done under new rules. More to come**

The RFC 1 connects key North Sea ports of Belgium and the Netherlands with the Mediterranean port of Genoa with about 3,900 km of corridor lines, seven sea ports and more than 100 terminals.

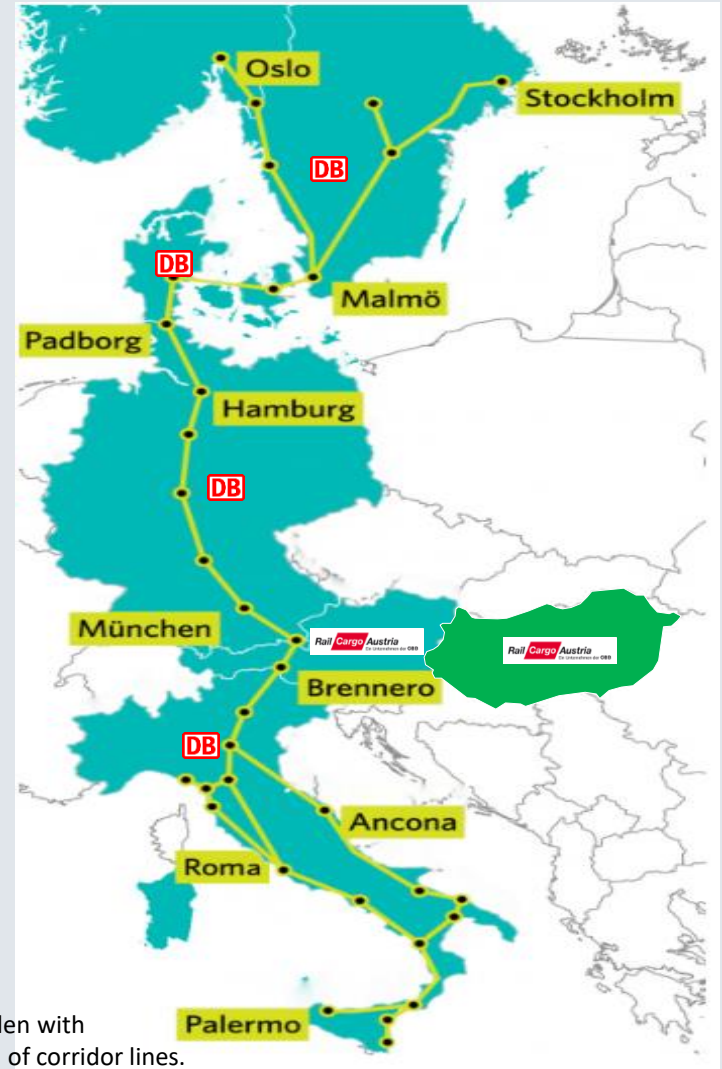
DB Cargo Use Case 2:
Common Braking Rules on Rail Freight Corridor (RFC) 3

The main objective is to develop pilot projects along the Scandinavian-Mediterranean Corridor. Sweden, Denmark, Germany, Austria Italy and also Hungary in focus. These pilots will overcome the issue of the current different national braking sheets and braking performance calculations, which hinder today interoperable seamless freight train operations on the corridor Scandinavian-Mediterranean (Rail Freight Corridor 3 (RFC3)).

A first study concerning „Braking“ is currently being carried out

Initial “Braking” situation

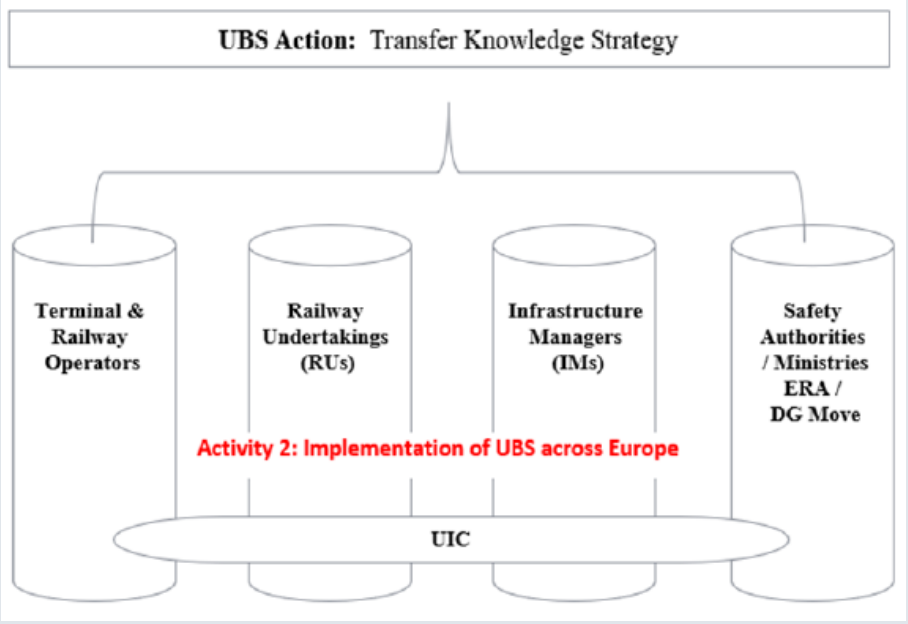
1. National specifications	Identification and analysis in progress
2. Needs for changes	To identified
3. Responsibilities	To identified
Result	To Identified

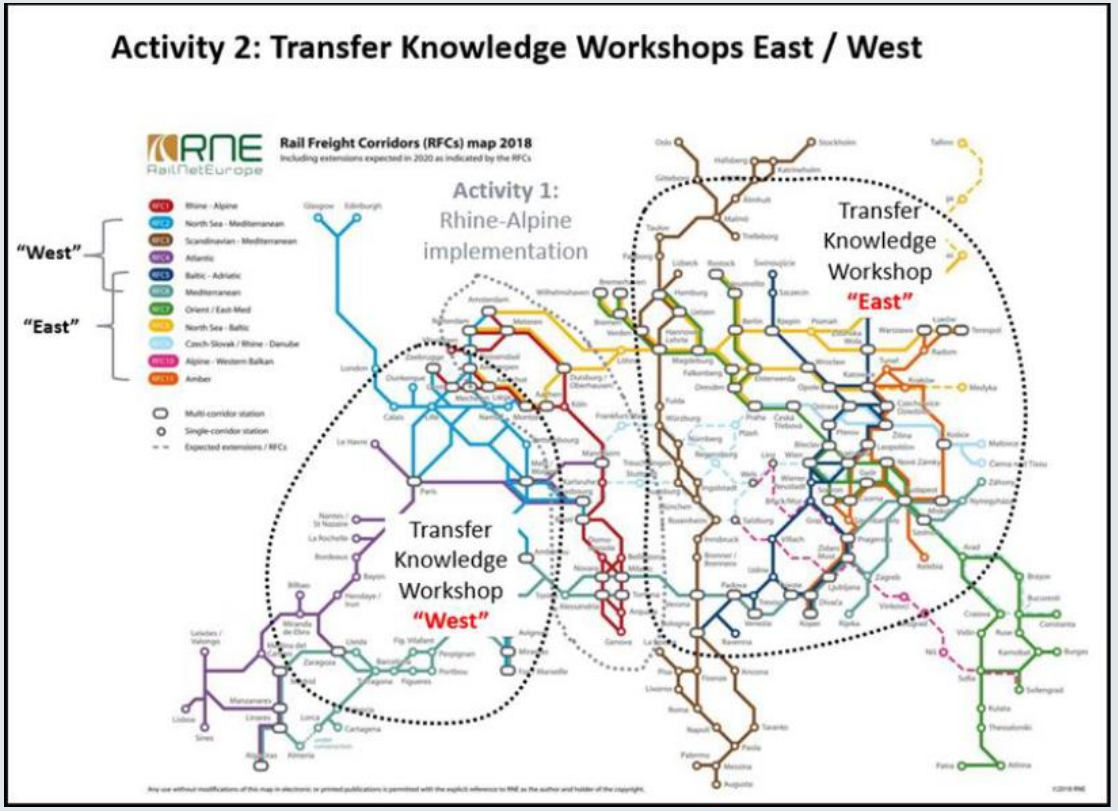


The RFC 3 connects Norway and Sweden with the coast of Italy with about 7,527 km of corridor lines.

DB Cargo as trendsetter to Unified Braking Scheme (UBS) in Europe – developed by X-Rail/UIC Working Group

The plan is to roll out the UBS solution beyond the Rhine-Alpine Corridor and to ensure a continuously improving process, which could lead to the adoption of the solutions on other rail freight sections and other rail freight corridors.





What did the working groups achieve so far?

International brake sheet and wagon list

5. Country code						

1. Issuing RU	2. Train number	3. Departure date	6. Train profile:						
4a. Valid from station		4b. Valid to station	7. V_{max}, km/h:						

Train parameters

8. Remarks during the journey	9. Special features of the train

☐ 10. Dangerous goods in train	☐ 11. Exceptional consignment in train		☐ 12. Additional documents about restric	
☐ 13. Waste shipments in train	17a. Valid from station	17b. Valid to station	17a. Valid from station	17b. Valid
☐ 14. Cast iron brake blocks used for >50% of braked weight	18a. # of first wagon	18b. # of last wagon	18a. # of first wagon	18b. # of la

15. Required line	16. Brake setting					
	a	b	a+b	a	b	

The new international brake sheet covers all requirements. The information in the boxes are clear for the driver anyway which language he speaks.

Field explanations:

1.	The RU issuing the brake sheet.
2.	The number of the train valid at departure from the "Valid from station" (field 4a).
3.	The departure date of the train valid at departure from the "Valid from station" (field 4a).
4a.	The station from which this brake sheet and wagon list is valid, written in text.
4b.	The station until which this brake sheet and wagon list is valid, written in text.
5.	ISO codes of countries in which this brake sheet is valid, fields 6 and 7 to be filled according to the given country.
6.	The train index (e.g. ME100). In the absence of index the timetabled train type (P or G). In Switzerland the "Zugreihe" and "Bremsreihe" (e.g. A50). Provided per country.
7.	The maximum technically allowed speed of this train consist. Provided per country.
8.	Space for remarks about incidents and observations during the journey.
9.	Direct explanations or references to attached documents that describe the special features of the train.
10.	Tick if there are any goods with RID marking in the train.
11.	Tick if there are any shipments in the train that are marked as exceptional consignment (i.e. permission number present).
12.	Tick if there are additional documents added to the brake sheet that describe further restrictions applying to the train.
13.	Tick if there are waste transports in train.
14.	Tick if more than 50% of train brake weight is braked by using cast-iron brake blocks (the rest being braked by composite or disc brakes).
15.	The highest railway line classification required by vehicles present in the train. For the range of A-C only a letter (e.g. C) is to be given, from line class D also a number (e.g. D2) must be provided.
16.	Brake setting of the train - G, P or LL (long locomotive).
17a.	The station from which these train parameters are valid, written in text.
17b.	The station until which these train parameters are valid, written in text.
18a.	The number of the first wagon after the locomotive on the given stretch.

Fields 17-18 are to be used for indicating the stretch for which the data is valid in case train parameters change en route. Several stretches to be used only in case the creation of a new

Calculation & Rules

- Brake position rules for P trains mainly aligned
- No issues for G train brake position alignment beyond allowance of non-braking vehicles
- The majority of requirement adaptations can be made by purely mathematical means
- The proposed approach would enable Austria and Switzerland to be integrated without any major obstacles
- The proposed approach is viable for France
- The proposed approach would enable a full harmonization