



Photo Vidar Nordli-Mathiesen

Towards a better European passenger rail network

Presentation to the EPF conference 2022

Copenhagen, June 11th 2022

ProRail

BANENOR

EUROLINK

European rail infrastructure managers have three motives for a better international passenger rail network in Europe



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Better connectivity



Sustainable mobility



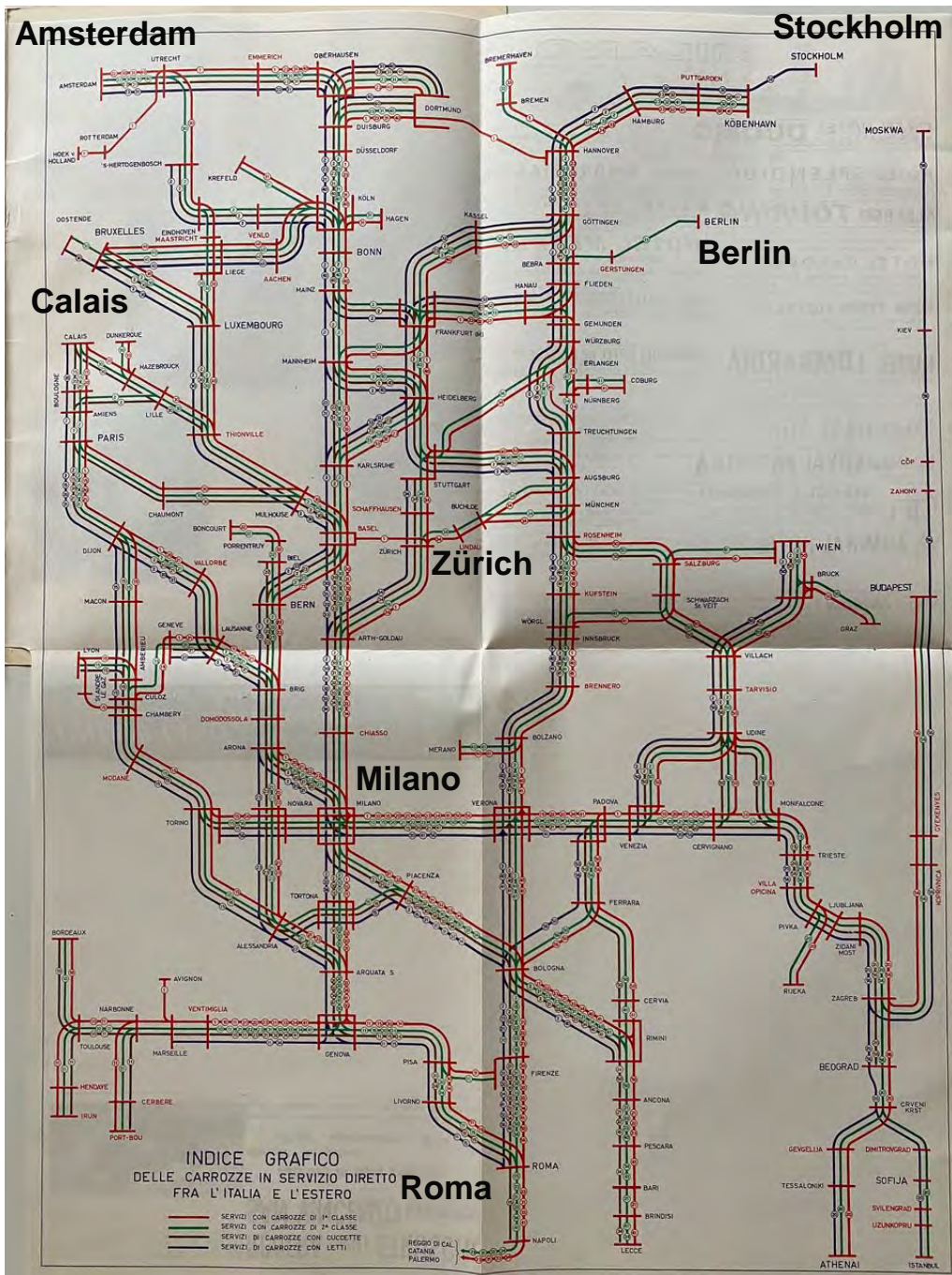
Optimized use of infrastructure

This presentation shows that we can improve the international passenger rail network when we work together from a European perspective. And contribute more to sustainable mobility.

- 1 Urgency: connectivity & climate.
- 2 Context: rail market and modal shift.
- 3 Eurolink: focus and rail network design philosophy.
- 4 Eurolink: first results.



1. Urgency: connectivity & climate



European connections to Italy in 1974

- Courtesy of Walter Finkbohner, former-director of SBB.

Connections

ROME - STOCKHOLM

Fr 10.06.2022

07:25 - 13:34 30:09 chg. 7

FR - EC - ICE - D - IC - R - Bus - X2

Roma Termini
Stockholm Central

Long trip: departure: 10.06.2022, arrival: 11.06.2022

Current information available.

Includes trains requiring a reservation

07:25 - 15:18 31:53 chg. 4

FR - EC - ICE - D - R

Roma Termini
Stockholm Central

Long trip: departure: 10.06.2022, arrival: 11.06.2022

Current information available.

Includes trains requiring a reservation

09:20 - 17:37 32:17 chg. 9

FR - EC - ICE - RE - RE - IC - ICL - R - Bus - X2

Roma Termini
Stockholm Central

Long trip: departure: 10.06.2022, arrival: 11.06.2022

Current information available.

Includes trains requiring a reservation

09:20 - 18:45 33:25 chg. 8

FR - EC - ICE - RE - RE - IC - ICL - R - X2

Roma Termini

Scandinavian connections to Italy in 2022

- Print screen from «DB Navigator»

How Italy's high-speed trains helped kill Alitalia

CNN • Updated 14th October 2021



Today we see growing ambitions on a European scale. A call for fast steps, better connectivity and more sustainable mobility.

- **EC Sustainable & Smart Mobility Strategy** aims for 2x number of high-speed passengers in 2030 and 3x in 2040. **Action plan** published last December 2021.
- The **International Rail Passengers Platform** is since Spring 2020 a cooperation between member states, EC and sector parties.
- Infrastructure managers contribute with the **Eurolink** project for European network development.



WHERE THE POSSIBILITIES ARE ENDLESS

How Trans Europe Express trains could be making a comeback

Ben Jones, CNN • Updated 5th February 2021

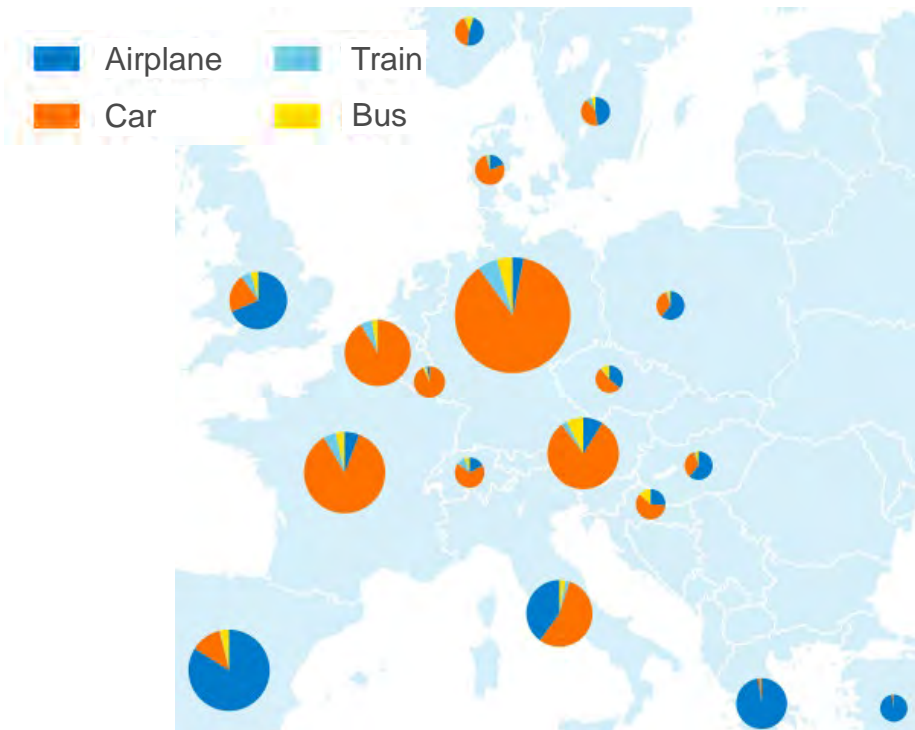




2. Context: rail market and modal shift.

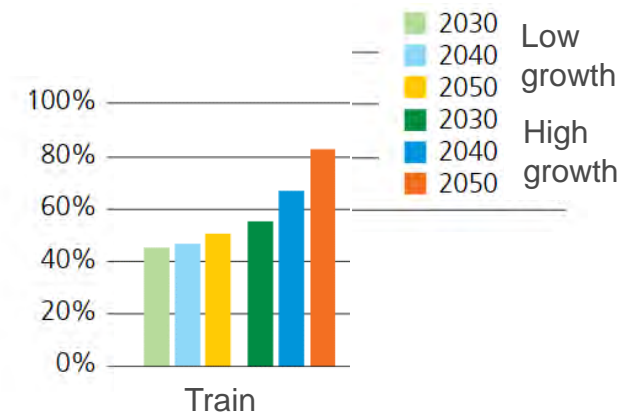
Per year millions of people travel cross-border by rail within Europe. This number is growing.

For instance to/from the Netherlands, rail accounts for 6% of all leisure trips to Belgium and Germany, and 17% for urban destinations.



Modal split from/to the Netherlands in 2018.
Source: KiM, Mobiliteit bij vakanties naar het buitenland (2020)

We expect a pick-up of pre-COVID trends and a further 40 – 60% autonomous growth towards 2030/2040.



Important connections show stronger growth:

- Amsterdam – Berlin could increase with 80%.
- Amsterdam – Köln up to 100%.
- Amsterdam – London up to 400%.

Passenger market forecast to/from the Netherlands 2030-2040-2050
Source: ProRail, IMA (2021)

Growth also means modal shift from air (and road) to rail. Rail can contribute up to 8 Mton CO₂ reduction in Europe.

In the Netherlands rail and air sector parties defined a joint 'Action agenda train and aviation' to focus efforts.

- Substitution of flights by trains to London, Paris, Brussel, Düsseldorf, Frankfurt and Berlin.
- Alignment with long-distance and sustainable aviation.

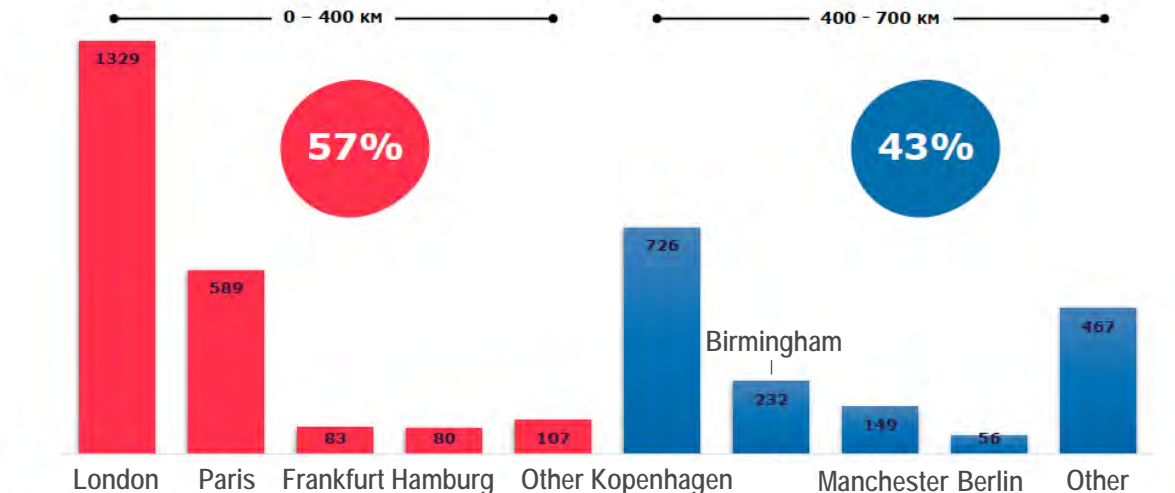
Other initiatives in France and Germany focus first on reducing national aviation.

Substitution in Europe can **reduce CO₂ emissions with 2 – 8 Mton**, roughly equivalent to all road traffic in the Netherlands (Rebel, 2020).

Dutch companies are investigating how to change their travel behaviour.

- Train up to 700kms by default, aviation by exception.
- Frequent air destinations match the action agenda.

Air destinations of 5 companies to/from the Netherlands in 2019.



BEDRIJVEN: ARCADIS – CAPGEMINI – ROYAL HASKONING DHV – STRUKTON

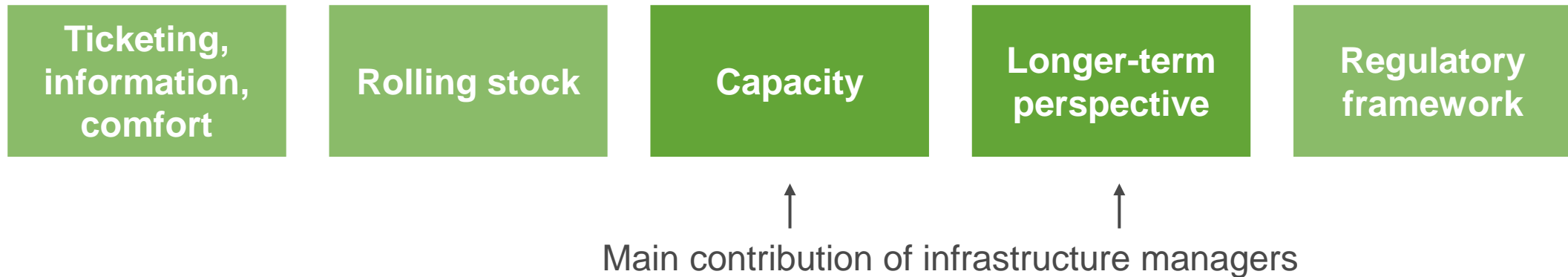
ANDERS
COREIZEN



3. Eurolink: focus and rail network design philosophy

Passengers may expect improvements throughout the chain

- The international train is an attractive product, but many aspects can be improved.
- For the operator a **successful train service stems from a combination of ingredients**. This determines, with or without government intervention, a better offer to the passenger.



Think European | Eurostar Amsterdam – London



Air-rail substitution

>50-60 daily return flights (pre-Covid)
Amsterdam – London



Suboptimal use of infrastructure



Suboptimal travel times from Amsterdam to London:

- Before 2018 >4h30
- 2020 (direct) ~4h10
- 2021 (direct) ~3h55 – 4h10
- **Optimal (direct) ~3h45**

From national timetables first and international second

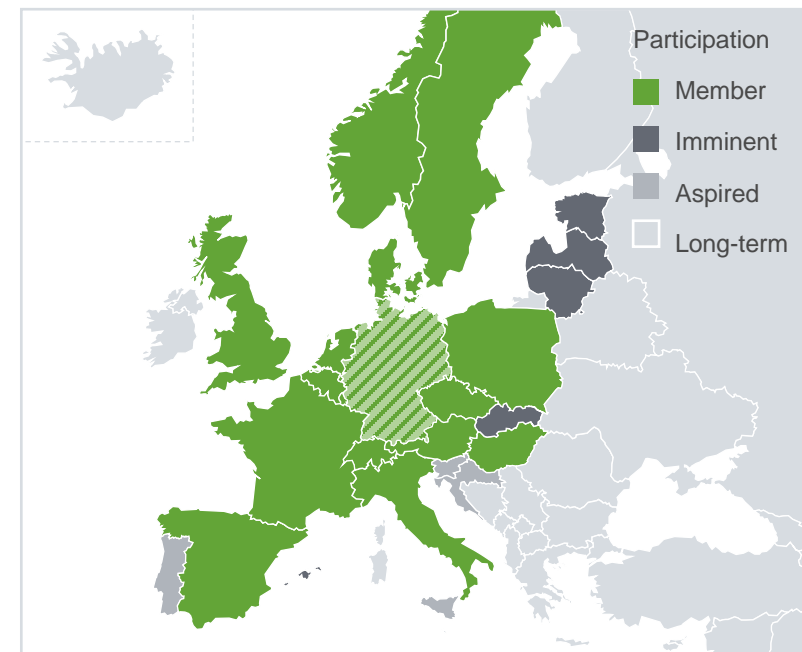


To international timetable first



Eurolink forms a growing platform for international network development

- **Our team of experts in network development is growing.**
 - Coreteam of InfraBel, ProRail, ÖBB, SBB, RFI and Správa železnic.
 - Eurolink develops timetable concepts 5-10-20 years into the future.
- **Contributions to International Rail Passenger Platform.**
- **Partnership with operators.**
 - Train operators can supply market insight and specifications. With operators and stakeholders we can identify feasible and viable steps forward.
- **Complement the formal capacity allocation process.**
 - 5-year perspective and stability as is being developed by RNE in TimeTable Redesign (TTR).



Our design philosophy for international network development contains different elements

Higher frequencies



- More cross-border connections
- Systematic slots with potential for growth

Shorter travel-times



- More attractive slots
- Needless run time margin to be avoided

Direct connections



- Much more direct connections throughout Europe
- Not just link two countries but three or even more

Optimized transfers



- Attractive transfers
- Pan-European integral clock face timetable

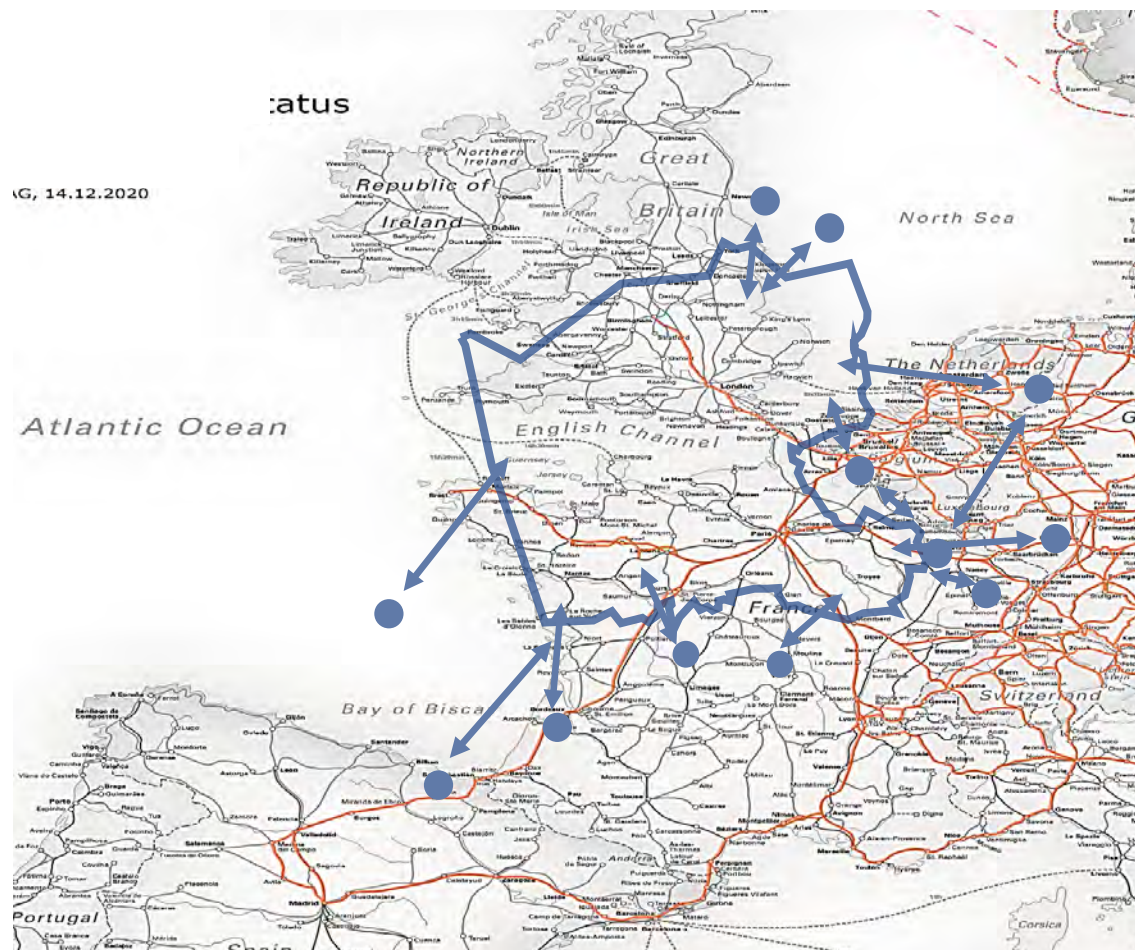
Twofold approach to infrastructure

- Short to medium-term > Optimal use of existing and planned capacity
- Medium to long-term > Smart, adaptive and targeted investments

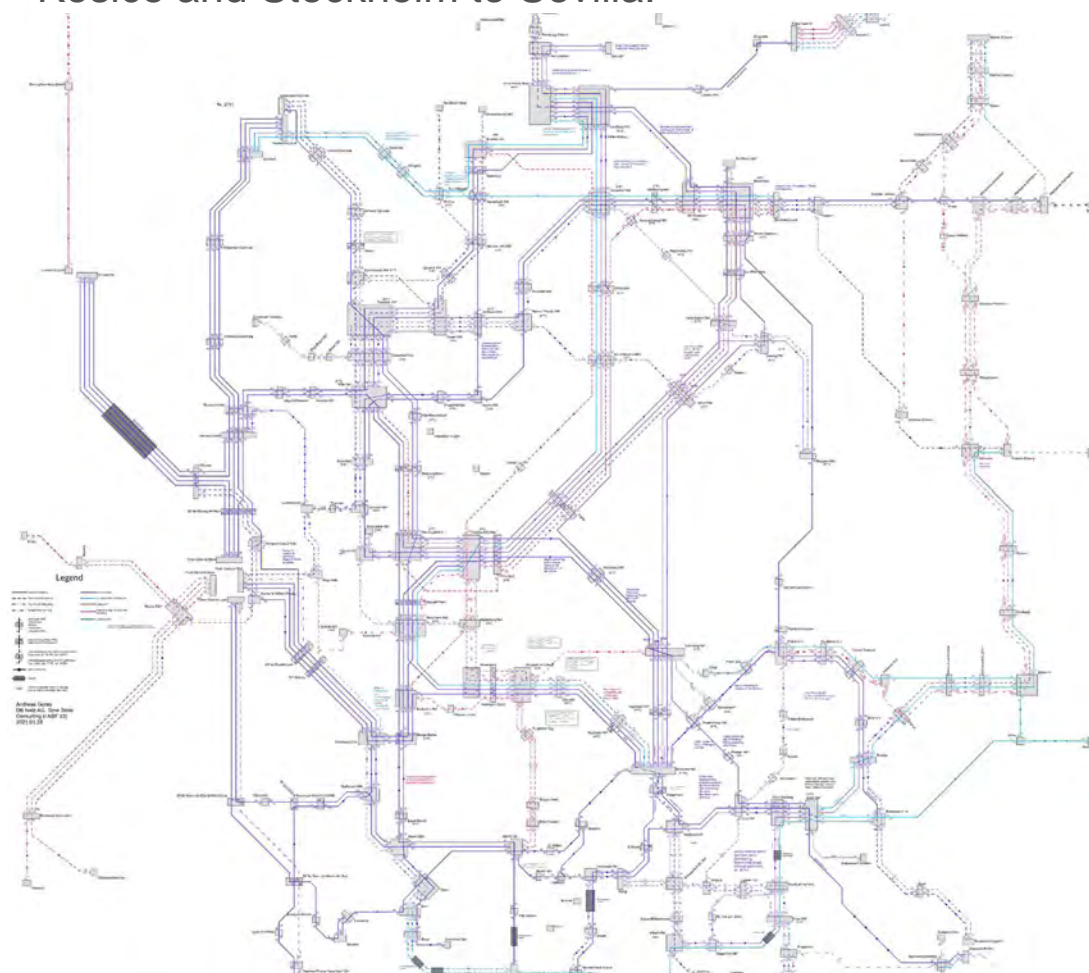


A common capacity model and timetable structure

Scope with mature design suitable for market analysis and discussions with operators, governments and



Underlying timetable structure, from Glasgow to Kosice and Stockholm to Sevilla.





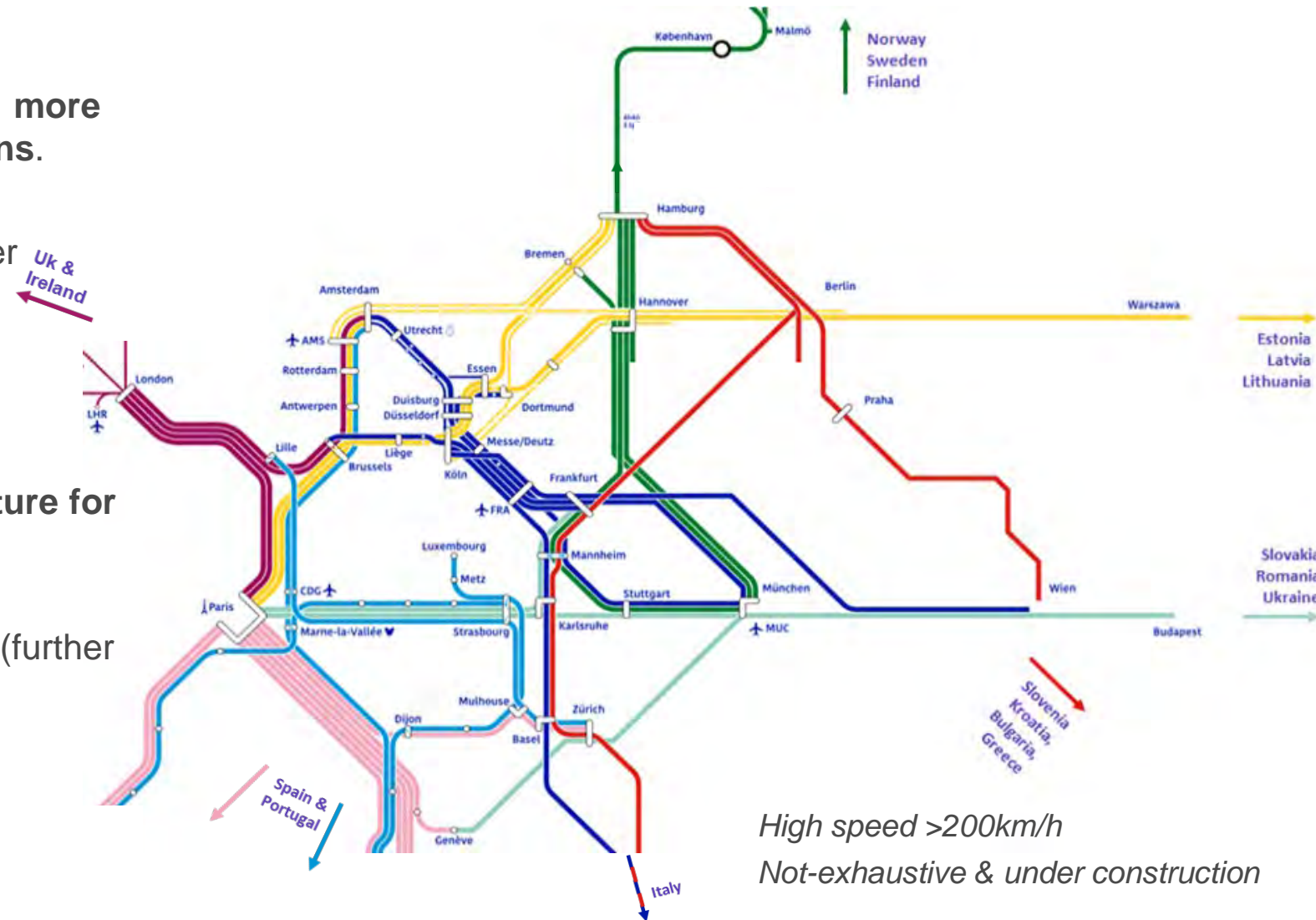
3. Eurolink: first results

A high-performance international network on expected infrastructure around 2030 could look like this

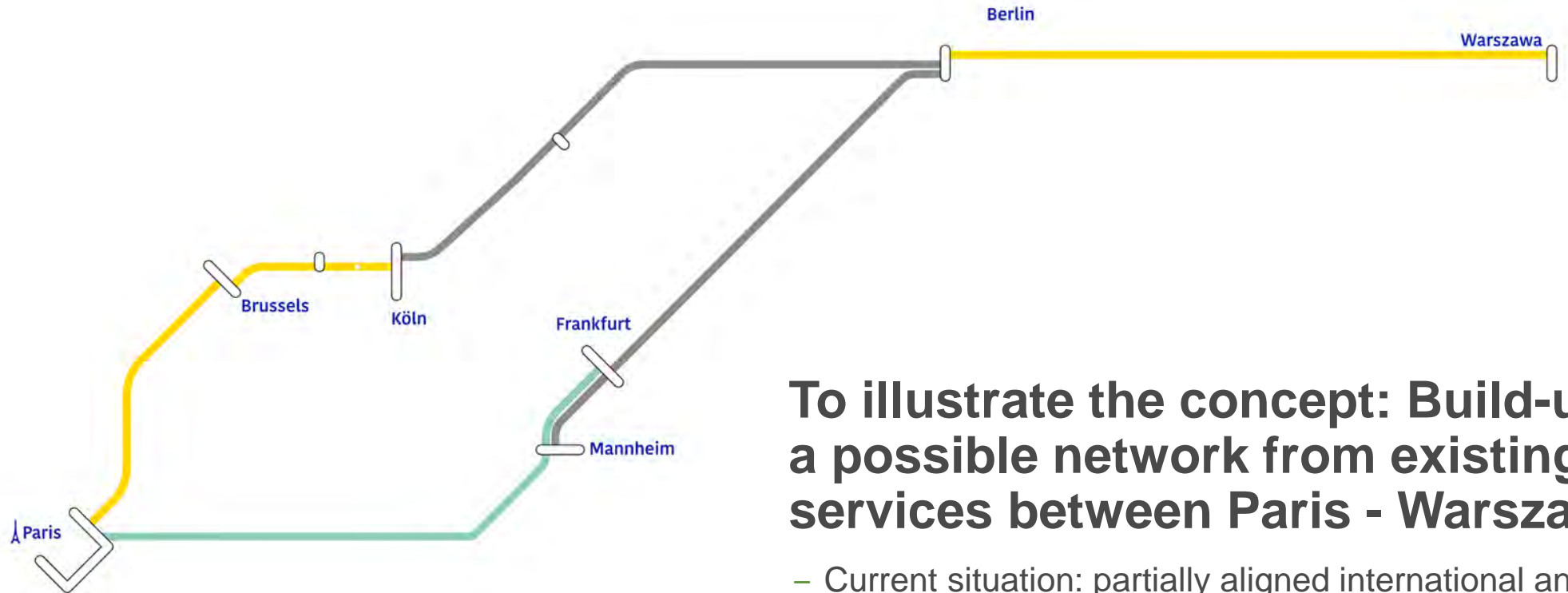
- High frequency, shorter travel-times, more direct services and better connections.
- Cohesive network of corridors.
- **Quality hubs**, also to aviation and other modalities.



- **Cadenced and systematic slot structure** for market growth.
- **Possible on expected infrastructure** (further microscopic study to be done).



High speed >200km/h
Not-exhaustive & under construction



To illustrate the concept: Build-up of a possible network from existing services between Paris - Warszawa

- Current situation: partially aligned international and national services.

Paris to	Today
Köln	3h26
Berlin	8h20, 1 change
Warszawa	15h09, 3 changes

*Current travel times are based on public information for April/May 2021 and may be influenced by COVID.



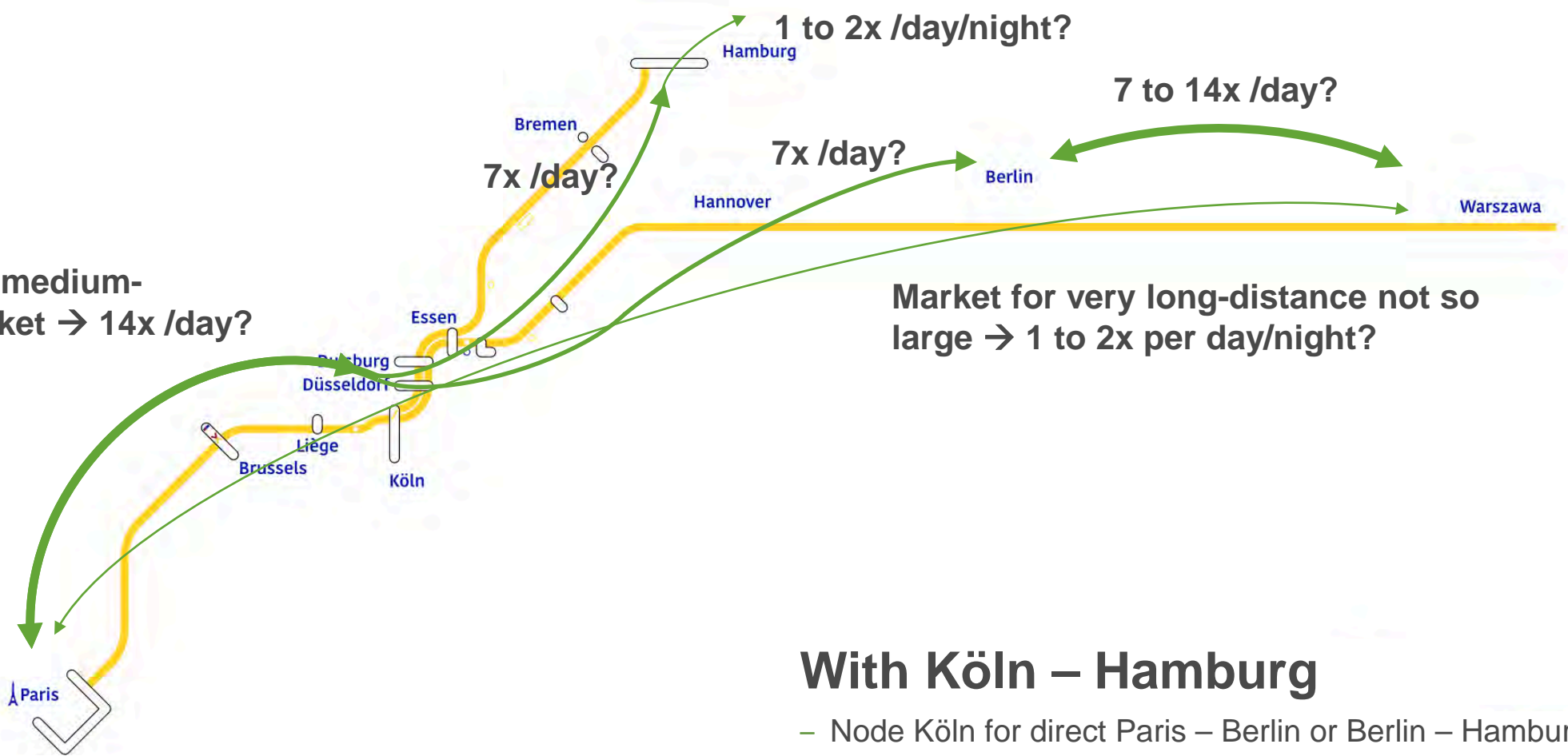
In Eurolink we align slots to create long-distance opportunities

- Systematic and perhaps preferential slots. Basis for alignment, product development by the market and growth.
- Current international and national slots combined.
- Hourly services possible.

Paris to	Eurolink	Today
Köln	3h19	3h26
Berlin	8h05	8h20, 1 change
Warszawa	13h44	15h09, 3 changes

*Eurolink travel times on this and following slides are indicative and subject to change

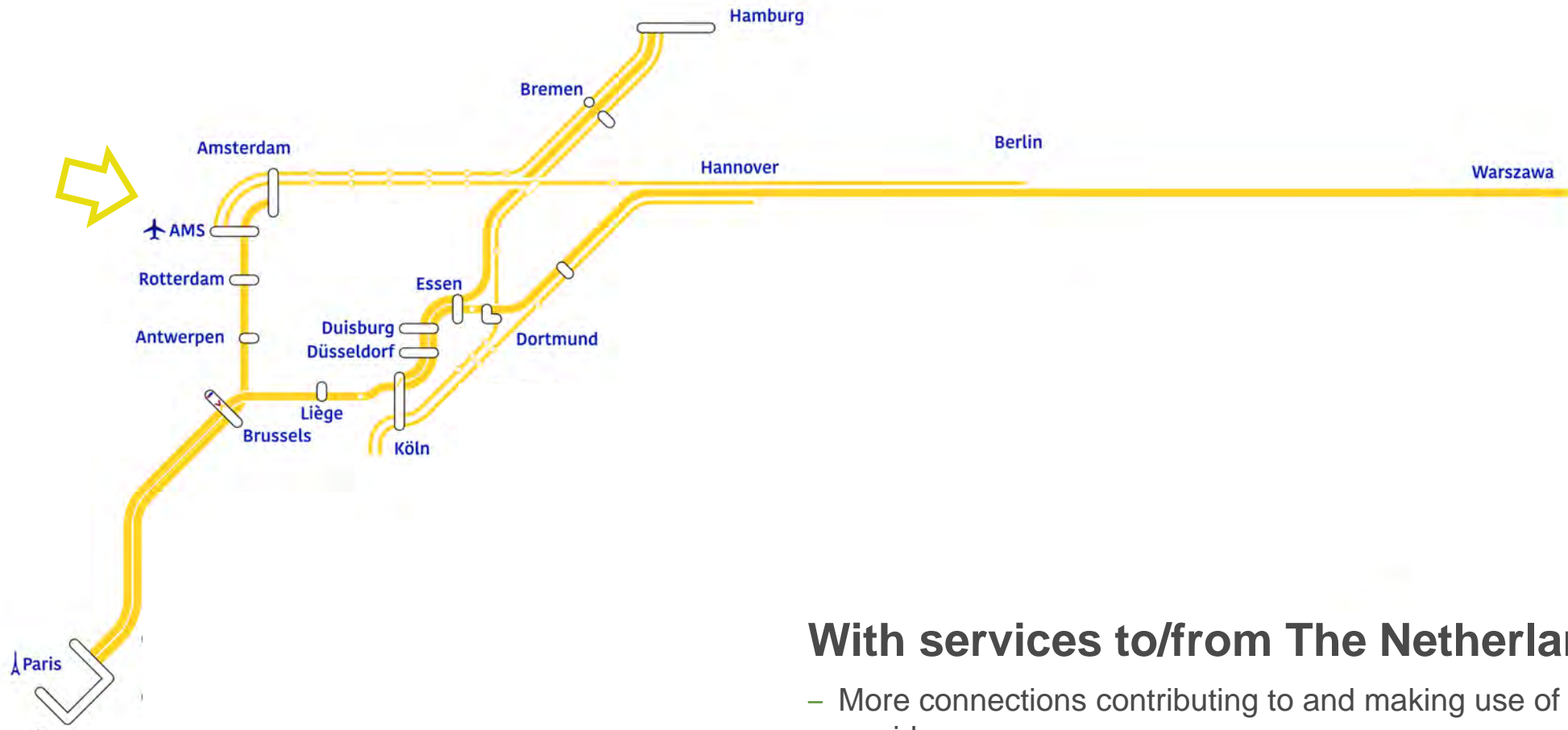
High volume medium-distance market → 14x /day?



With Köln – Hamburg

– Node Köln for direct Paris – Berlin or Berlin – Hamburg

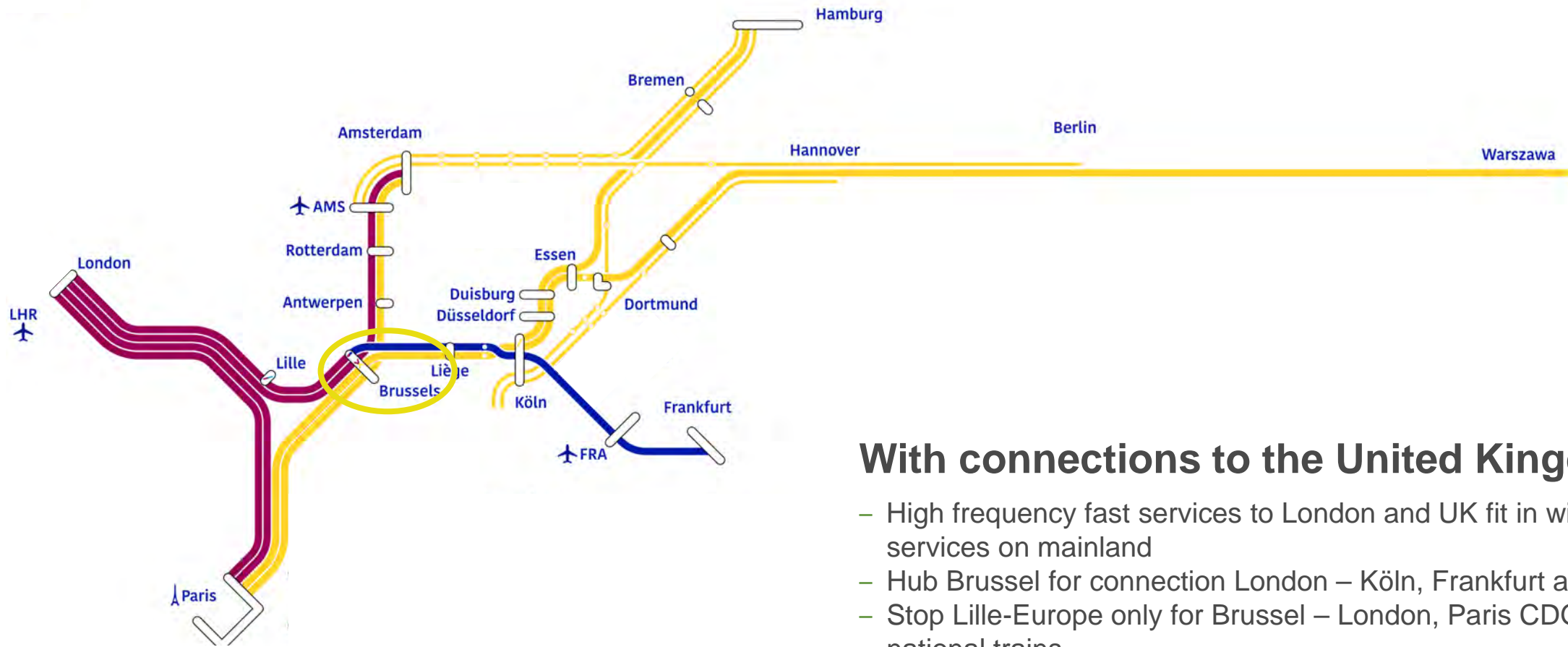
Paris to	Eurolink	Today
Hamburg	7h00, direct	8h04, 2 changes



With services to/from The Netherlands

- More connections contributing to and making use of the corridor.
- Amsterdam – Warszawa also conceivable.
- Hamburg – Amsterdam via Osnabrück Alstadt.

Amsterdam to	Eurolink	Today
Hamburg	4h48	5h05, 1 change

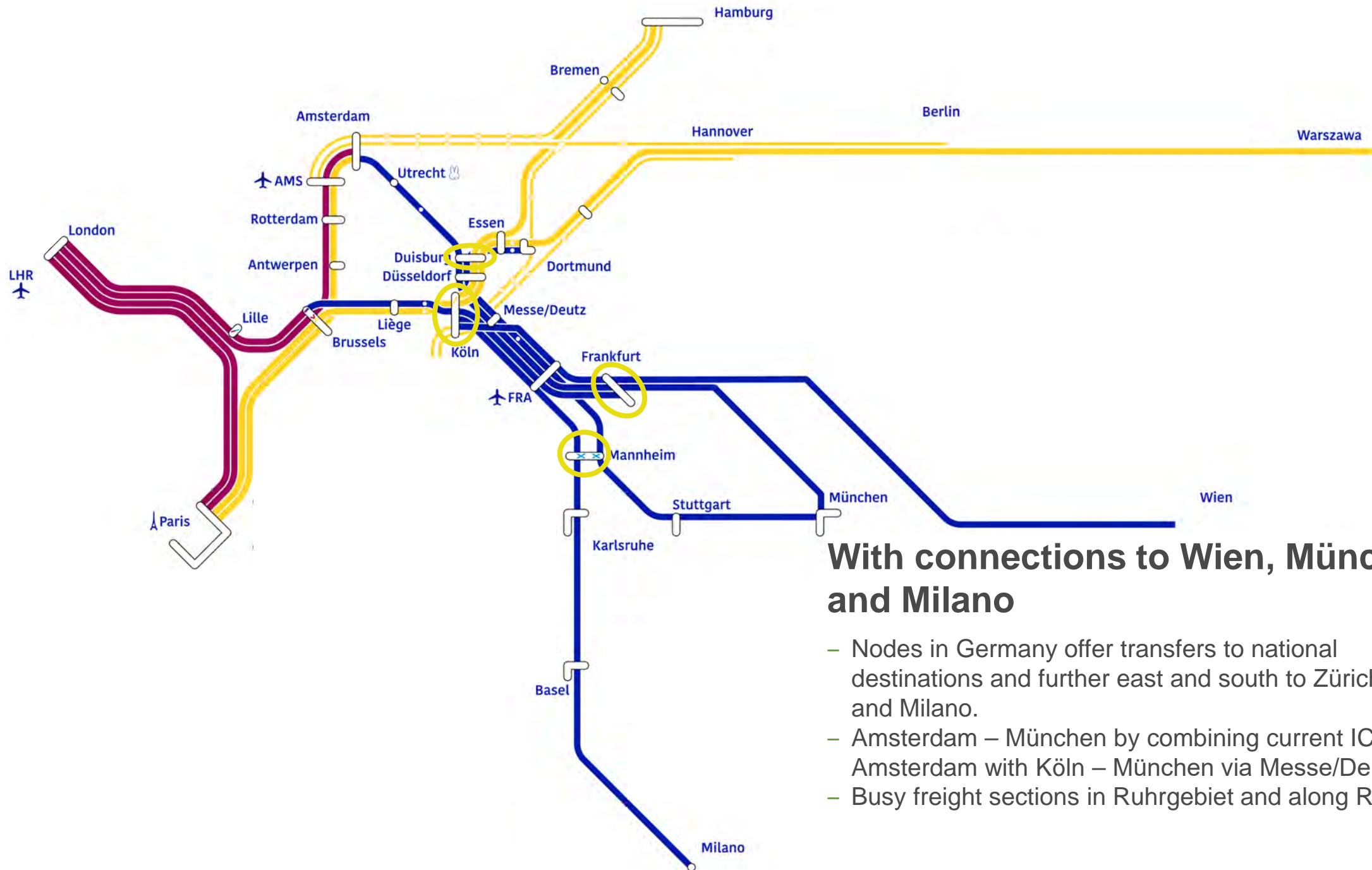


With connections to the United Kingdom

- High frequency fast services to London and UK fit in with yellow services on mainland
- Hub Brussel for connection London – Köln, Frankfurt and Berlin.
- Stop Lille-Europe only for Brussel – London, Paris CDG and national trains.

London to	Eurolink	Today
Paris	2h24	2h36
Brussel	1h54/2h00	2h00
Amsterdam	3h44/4h10	4h10*
Köln	4h24, 1 change	6h17, 1 change
Frankfurt	5h32, 1 change	6h04, 1 change

* Excl. 12' stop Lille



With connections to Wien, München and Milano

- Nodes in Germany offer transfers to national destinations and further east and south to Zürich, Wien and Milano.
- Amsterdam – München by combining current ICE Amsterdam with Köln – München via Messe/Deutz.
- Busy freight sections in Ruhrgebiet and along Rhine.

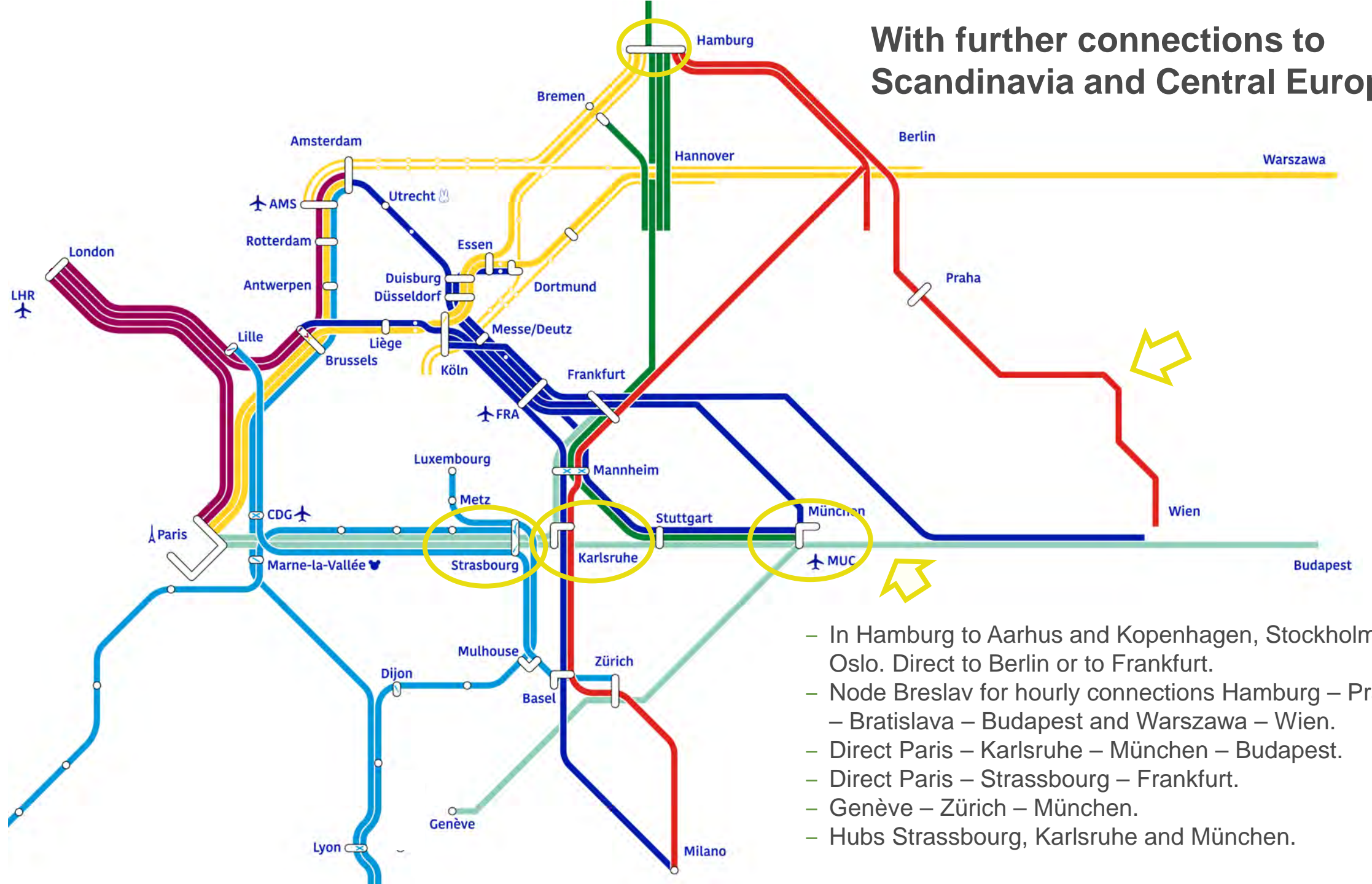


Long-distance around Paris to Switzerland and Mediterranean

- Amsterdam – Brussel to Strassbourg/Zürich or Lyon/Bordeaux/Barcelona
- Similar for London with transfer in Lille.
- New hubs Paris CDG and Marne-la-Vallée in all directions. Use TGV intersecteur structure.
- Fit with regional traffic in France to be studied.

Basel to	Eurolink	Today
London	5h23, 1 change	6h31, 2 changes

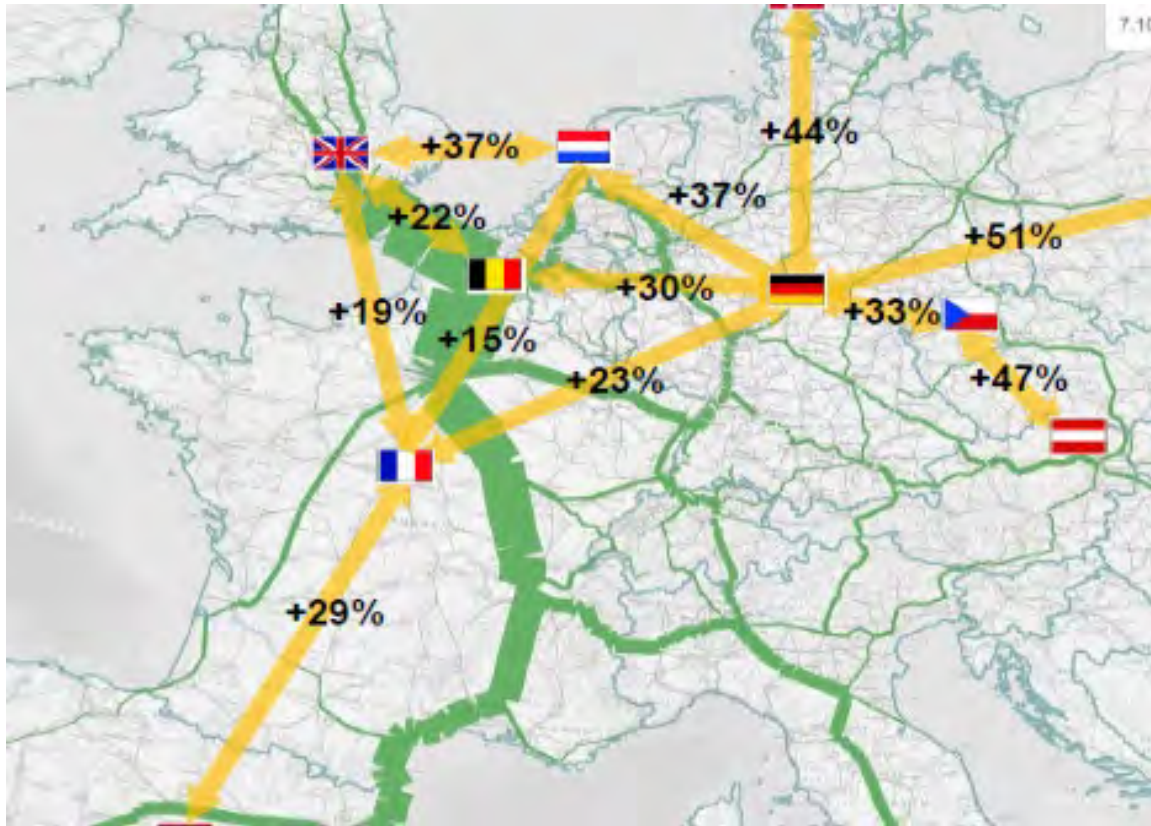
With further connections to Scandinavia and Central Europe



- In Hamburg to Aarhus and Kopenhagen, Stockholm and Oslo. Direct to Berlin or to Frankfurt.
- Node Breslav for hourly connections Hamburg – Praha – Bratislava – Budapest and Warszawa – Wien.
- Direct Paris – Karlsruhe – München – Budapest.
- Direct Paris – Strassbourg – Frankfurt.
- Genève – Zürich – München.
- Hubs Strassbourg, Karlsruhe and München.

Preliminary result | Eurolink 2030 concept leads to around 20-30% extra cross-border passengers. This can be improved.

Evaluation is on-going



- Good results in densest parts of Europe and between major cities.
- Effects of better long-distance timetabling in/around core area NW-Europe only.
- Extra growth varies per country-pair.
- Excludes domestic growth. Optimal fit with national/regional to be added.
- Low policy scenario.
- Further rail improvements lead to higher growth, for instance:
 - Better passenger experience (information, booking, traveller rights, hubs/comfort).
 - Pricing and through-ticketing.
 - Improved cross-border performance.

Together we create a better offer to the passenger, starting tomorrow!

- From easier ticketing and better travel experience,
- To more, faster and better connected trains,
- And quality hubs to other trains and modalities.

So rail can contribute more to sustainable mobility.



Photo Bruce Mars

ProRail

INFRABEL
Right On Track

EUROLINK



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