



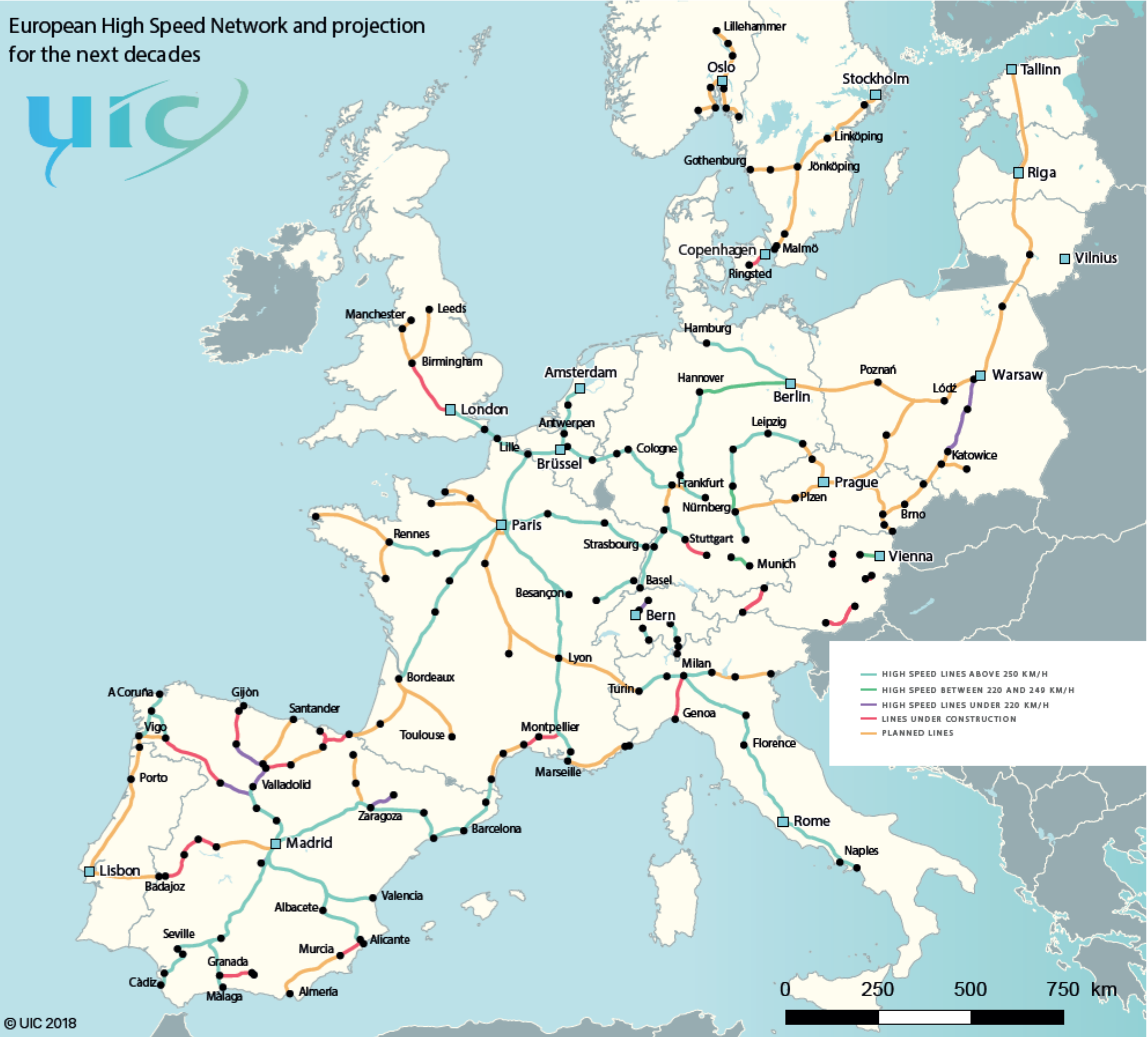
INTERNATIONAL UNION
OF RAILWAYS

UIC

Intercity & High-Speed Committee

Paolo De Cicco
UIC High Speed Senior Advisor

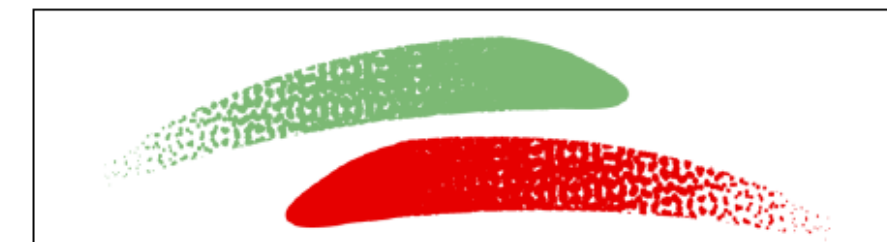
THE EUROPEAN and THE ASIAN HIGH-SPEED NETWORK



From Tokyo(2015) to Ankara (2018)

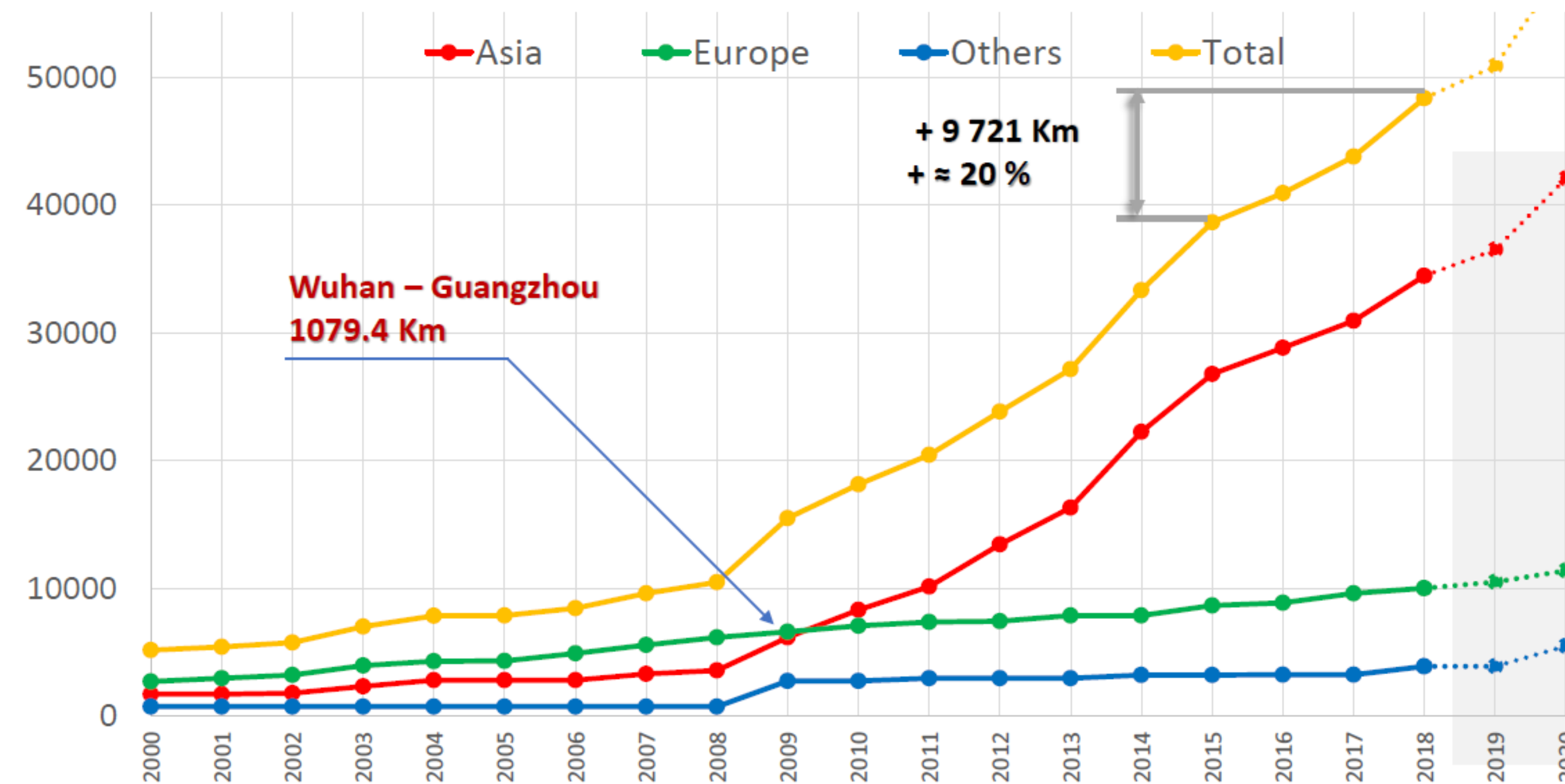


Celebrate the past. design the future



Sharing knowledge for sustainable

High Speed Rail Network Evolution since 2000



ASIA	36,372 [km]
EUROPE	9,176 [km]
OTHER	935 [km]
TOTAL	46,483 [km]

ASIA= ~ 78% total

ICHSC Intercity & High Speed Committee



Main objectives:

Co-ordinate High Speed Activities of UIC Members

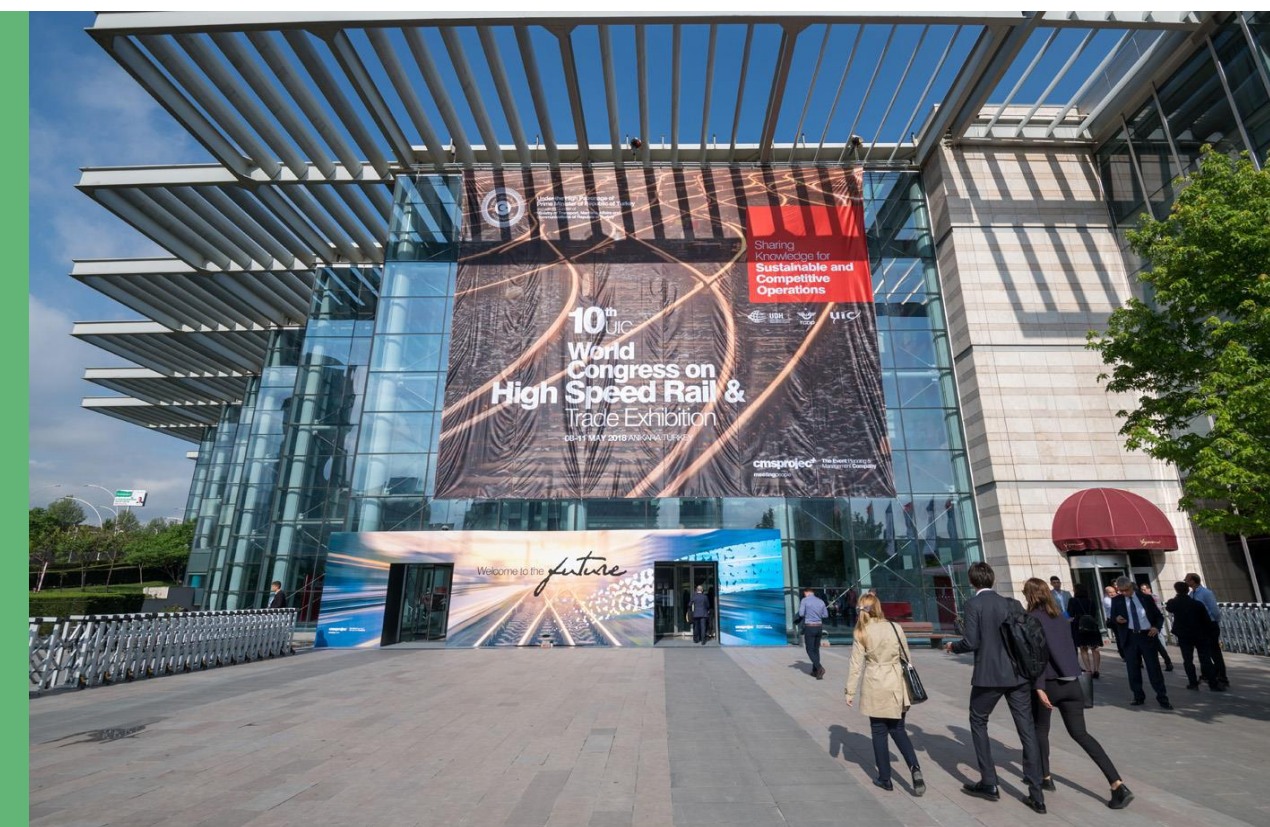
Contribute to the development of High Speed Rail around the world

ALLIANCE OF UNIVERSITIES FOR HIGH-SPEED RAILWAY

*Working together
for mutual benefit*

The Alliance of Universities for the development of high-speed railways is a global academic network including universities, institutes of technology, polytechnics, engineering, architecture and business schools that have proven and substantial involvement in the development of high-speed railways.

High-Speed trainings Lev. 1: April at UIC Lev. 2: Dec. in Madrid




NEXT: Beijing 2020
"Augmenting Intelligent Mobility"




STANDARDISATION:
6 IRSs – Implementation cluster
4 IRSs – new Design cluster

HIGH-SPEED SERVICES TO MEMBERS: HIGH SPEED RAIL BROCHURE AND OTHER PUBLICATIONS



Study Report

29/12/2017


NATURAL RISK STUDY - REPORT ON HIGH TEMPERATURES HAZARD





SYSTRA


INTERNATIONAL UNION OF RAILWAYS
unity, solidarity, universality

High Speed Service
Start-up Handbook

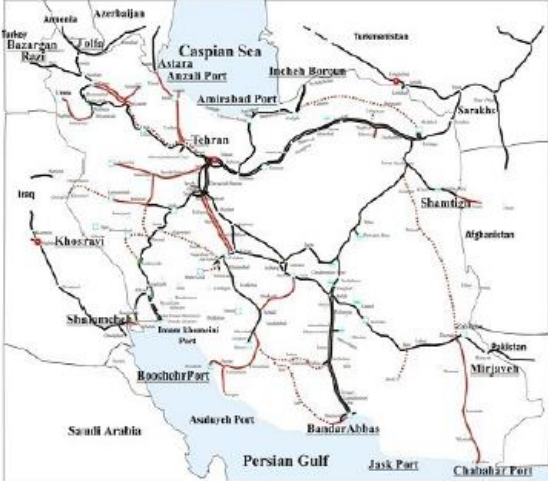




High Speed Railways in Iran

The Islamic Republic of Iran (IRI) has currently about 11,000 km of rail lines whose infrastructure manager is the public company Railways of the Islamic Republic of Iran (RAI), subset of Ministry of Roads and Urban Development.


As a result of the planned expansion of the network, according to the 2025 master plan, Iran railways would extend up to 25,000 km by 2025, reaching every original capital and boosting the current transportation of 25 million passengers (18,000 million passenger-km) to 45 million passengers (29,000 million passenger-km, at an average travel distance of 640 km).



The future railway network in Iran


With the increasing development of the benefits and advantages of high speed railways in other countries (especially in reducing the time of the journey, the attractiveness of regular and massive suburban travel, major environmental benefits, reducing energy consumption ...) designing, building and upgrading high speed railways in the most developed countries has been high priority.

Page 1 of 5



HIGH
SPEED
RAIL

FAST TRACK TO SUSTAINABLE MOBILITY





Rail High Speed Network SECURITY HANDBOOK

HIGH-SPEED SERVICES TO MEMBERS:

DATA BASES: HIGH-SPEED LINES, ROLLING STOCK, TRAFFIC, ETC.

HIGH SPEED RAIL MAPS

org/high-speed-database-maps


at Rail Future f... Ferservizi - Concess... RailLexic DALDOALS Google Traduttore ADP Accueil | Egencia Accueil - Intranet UIC Extra

HIGH-SPEED DATABASE & MAPS

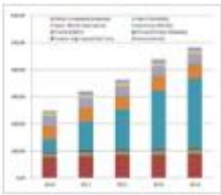
DOCUMENTS

UIC generate databases unique in the world that provides an overview of the HS reality regarding : lines, rolling stock, traffic and maps.


- High-speed lines with the corresponding characteristics ; an atlas of the high-speed network is based on this database and provides a good location of these lines
- List of high-speed rolling stock owned by the high speed operators across the world.
- High-Speed traffic information Worldwide
- High-Speed World maps with current and under construction lines



HS Lines
28 January - PDF - 594.8 kb
[See the document](#)




HS Traffic
22 January - PDF - 83.3 kb
[See the document](#)



HS Rolling Stock
22 January - PDF - 812.3 kb
[See the document](#)

Maps



PASSENGER

- COMMUTER & REGIONAL
- HIGH-SPEED
- PASSENGER RAILWAY STATIONS
- PASSENGER SERVICES GROUP
- TOPRAIL

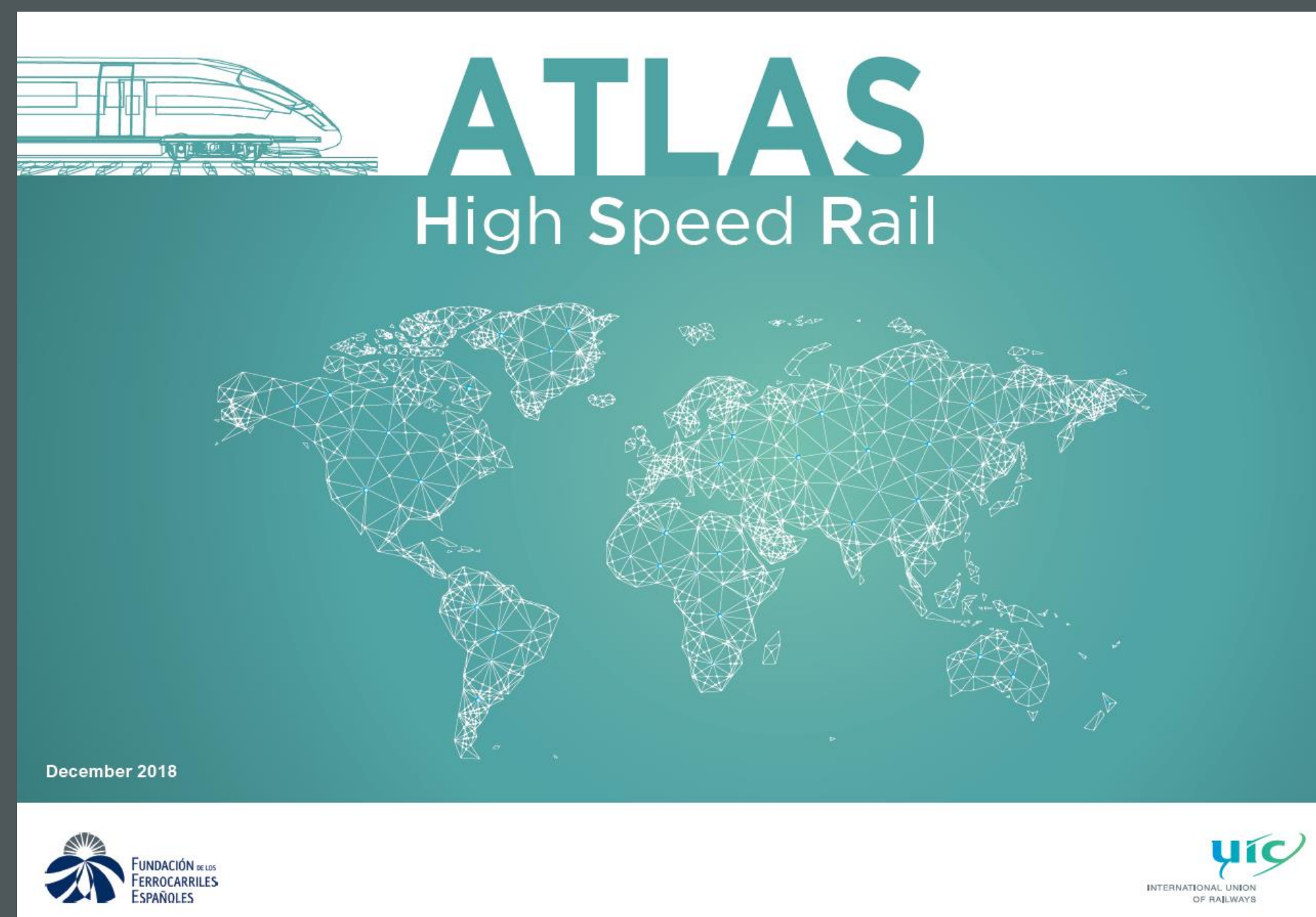
HIGH-SPEED ARTICLES

- HIGH-SPEED PRINCIPLES AND ADVANTAGES
- TRAINING SESSIONS ON HIGH-SPEED SYSTEMS
- UIC HIGH-SPEED CONGRESS
- HIGH-SPEED RAIL HISTORY
- HIGH-SPEED DATABASE & MAPS
- HIGH-SPEED LIBRARY
- HIGH-SPEED ALLIANCE OF UNIVERSITIES

PASSENGER ARTICLES

- PRODUCTS
- NEXTSTATION CONFERENCE
- SERVICE BRAND CODE LIST
- RIC

HIGH-SPEED SERVICES TO MEMBERS: BOOKS



LES LIGNES À GRANDE VITESSE DANS LE MONDE

Languages du Sud

لغات الجنوب



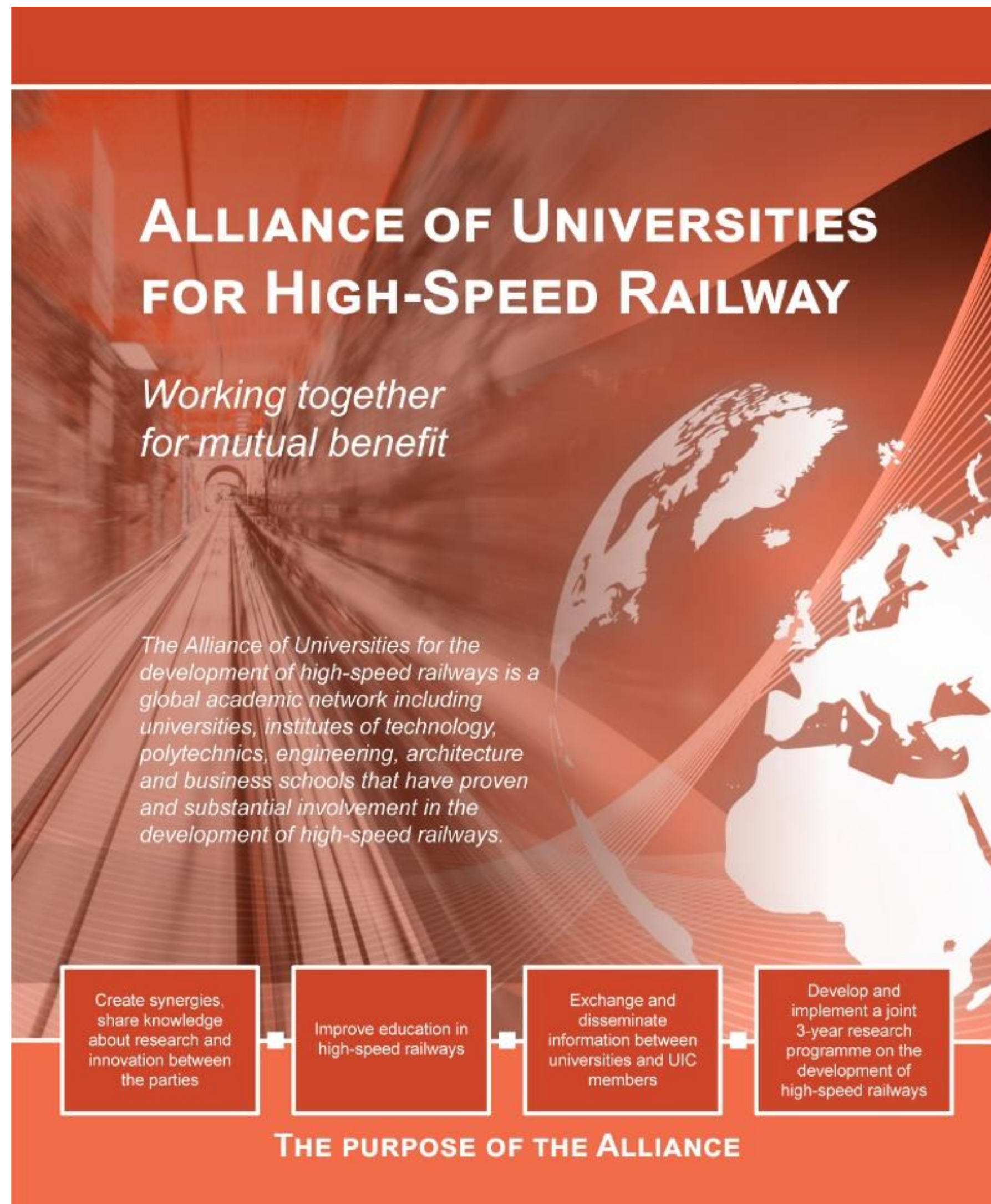
The Alliance of Universities is established, under the authority of the UIC WWW.UIC.ORG (International Union of Railways), for the development of high-speed railways. The Alliance is a global academic network including universities, institutes of technology, polytechnics, engineering, architecture and business schools that have proven and substantial involvement in the development of high-speed railways



Background Information

- **Time of Establishment:** December 2015
- **Members of the Alliance: 65** Representative members of **29** Universities from **13** different countries or regions
- **Meetings convened:** 4 times per year since 2015 – next one: 11/13 March 2019 in Paris (UIC HQ)
- **Current president of the Alliance:** Dr. Bin Ning, President of Beijing Jiaotong University, Academician of Chinese Academy of Engineering.

The Alliance of Universities is one of the working groups of the UIC Intercity and High-Speed Committee (IHSC)



The purpose of the Alliance is to:

- Create synergies, share knowledge about research and innovation between the parties
- Upgrade the rail education system in high-speed
- Exchange and disseminate information between Universities and UIC Members
- Develop and implement a joint 3-year research programme on the development of high-speed railways.



A joint 3-year research programme (2019-2021)

Subject 1:

HSR productivity

Idea:

Benchmarking study across HSR systems worldwide

Expectations:

Learn more about strengths and weaknesses of HSR systems by comparing HSR systems with each other and eventually with other transport modes by using malmquist productivity index

Timescale:

2 years with a presentation during the next congress in mid-2020

Budget:

50 000 €

Subject 2:

Rail Affordability

Idea:

Comparing worldwide the price of a HSR ticket with the corresponding prices by air and road and also to the price of other current goods and services

Objective:

Answer the question : “is HSR a transportation means for rich people”?

The answer will encompass all countries presently operating HSR and pave the way for inclusion of future operators of HSR.

Timescale:

2 years with a presentation during the next congress in mid-2020

Budget:

€

Subject 3:

Marginal cost and value of time

Idea:

Assessing the HSR marginal cost and the value of time when offer and demand meet by addressing all the components of the HSR marginal cost

Expectations:

Understand better the evolution of the generalized travel cost by high speed train

Timescale:

2 years with a presentation during the next congress in mid-2020

Budget:

€

Subject 4:

Hydrogen Hybrid HSR

Idea:

An hydrogen powered high speed trainset would strongly improve the HSR technology.

If it is not possible let's consider an hybrid trainset

Advantages:

No catenaries, less pollution

An hybrid trainset could run on a not electrified line connected to the HS network thanks to interoperability

Timescale:

2 years with a presentation during the next congress in mid-2020

Budget:

€

Subject 5:

Virtual coupling

Idea: replace the physical coupling of trainsets by a virtual one so that two trainsets can run at 300 kph or more while being separated by, let's say, 1 metre only.

Advantages:

This way the track capacity could be increased not only because the stop is avoided, but also because one could imagine to have trains made up of more than 2 trainsets.

Objective: evaluate the implications of this idea and its feasibility.

Other formulation of the problem: can we suppress the signalling systems and replace them by autonomous trains in a similar way road is progressively adopting driverless cars.

Timescale:

2 years with a presentation during the next congress in mid-2020

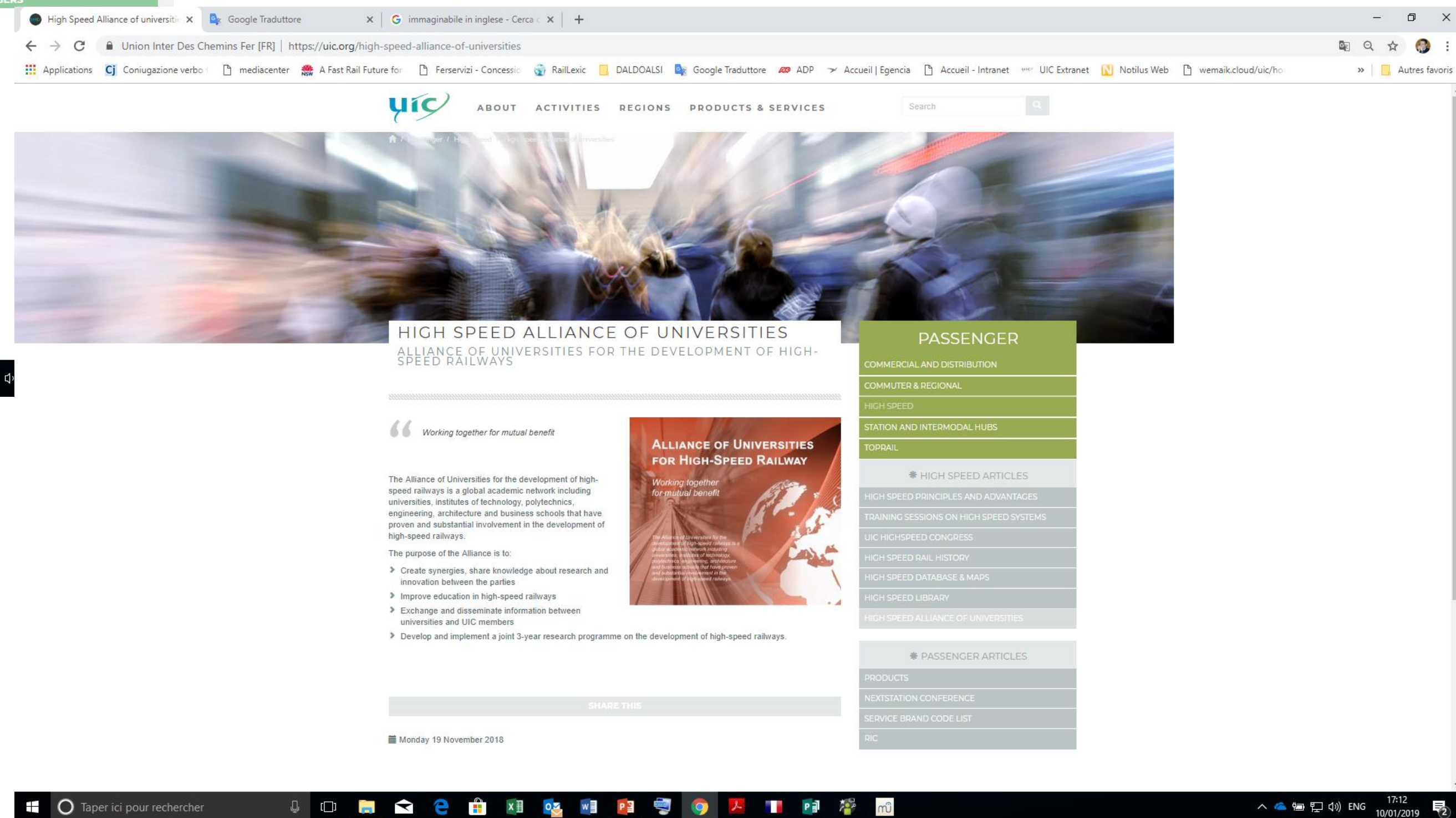
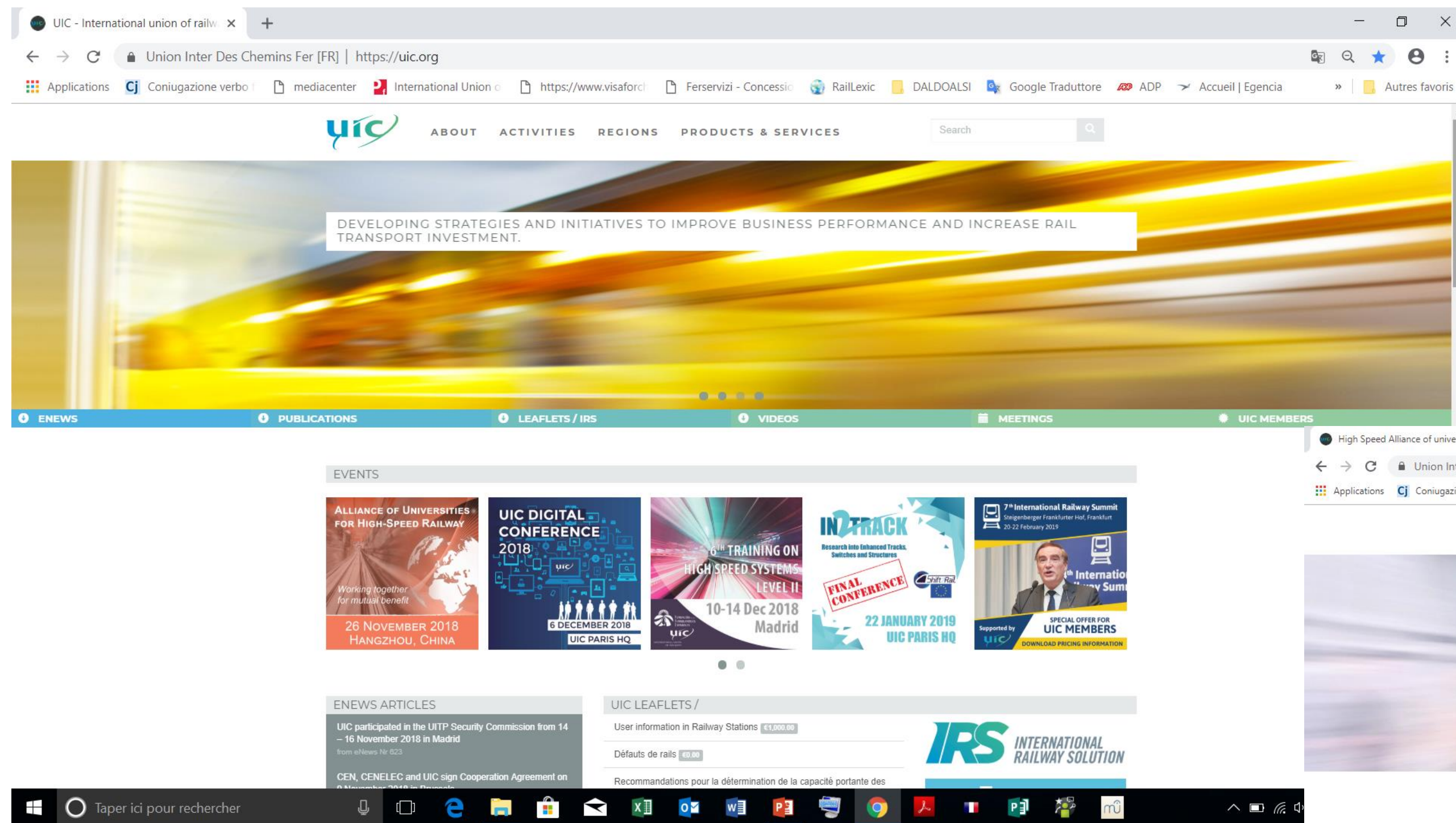
Budget:

€



Dedicated Alliance page on the UIC web site – DONE !

<https://uic.org/high-speed-alliance>

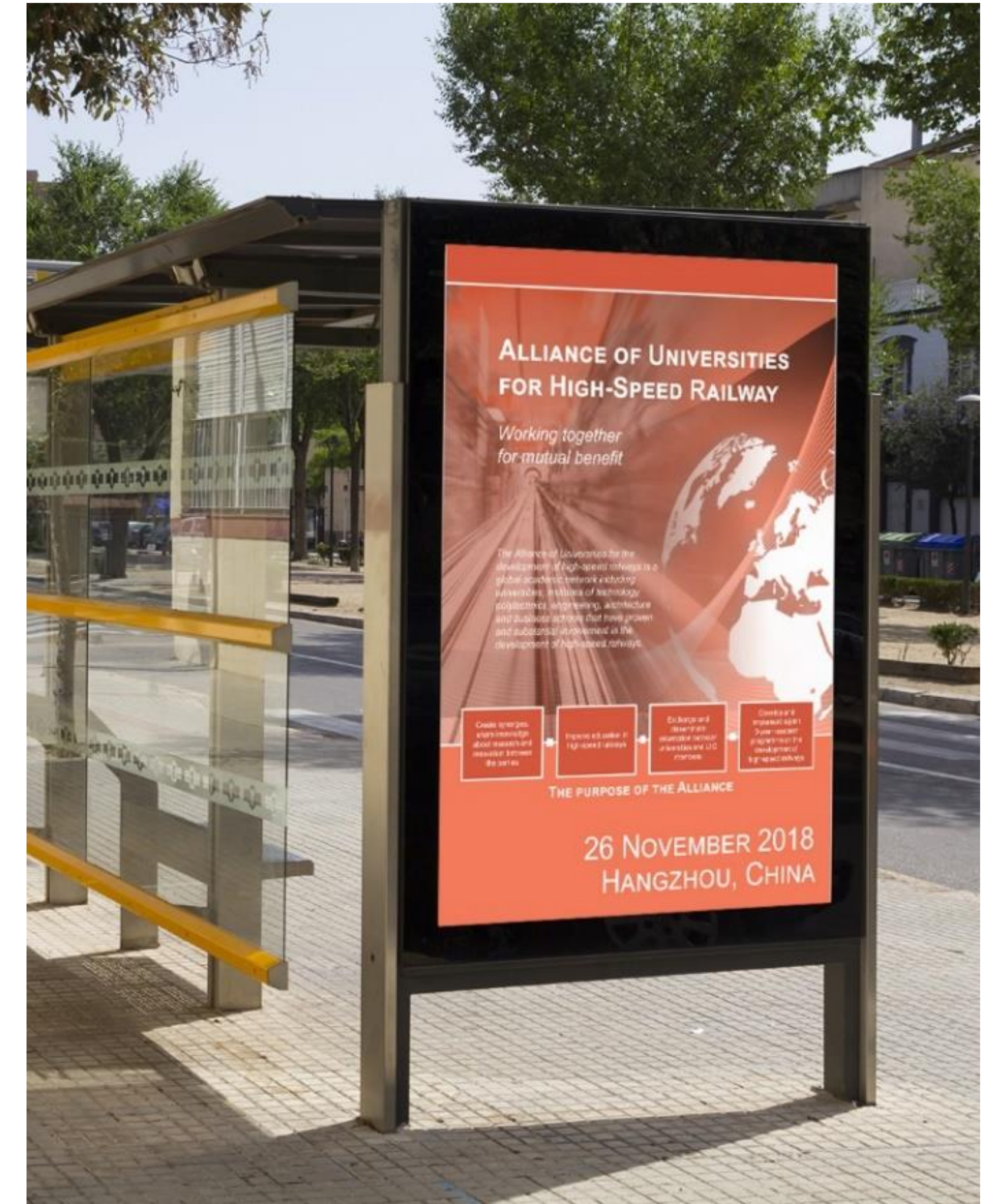
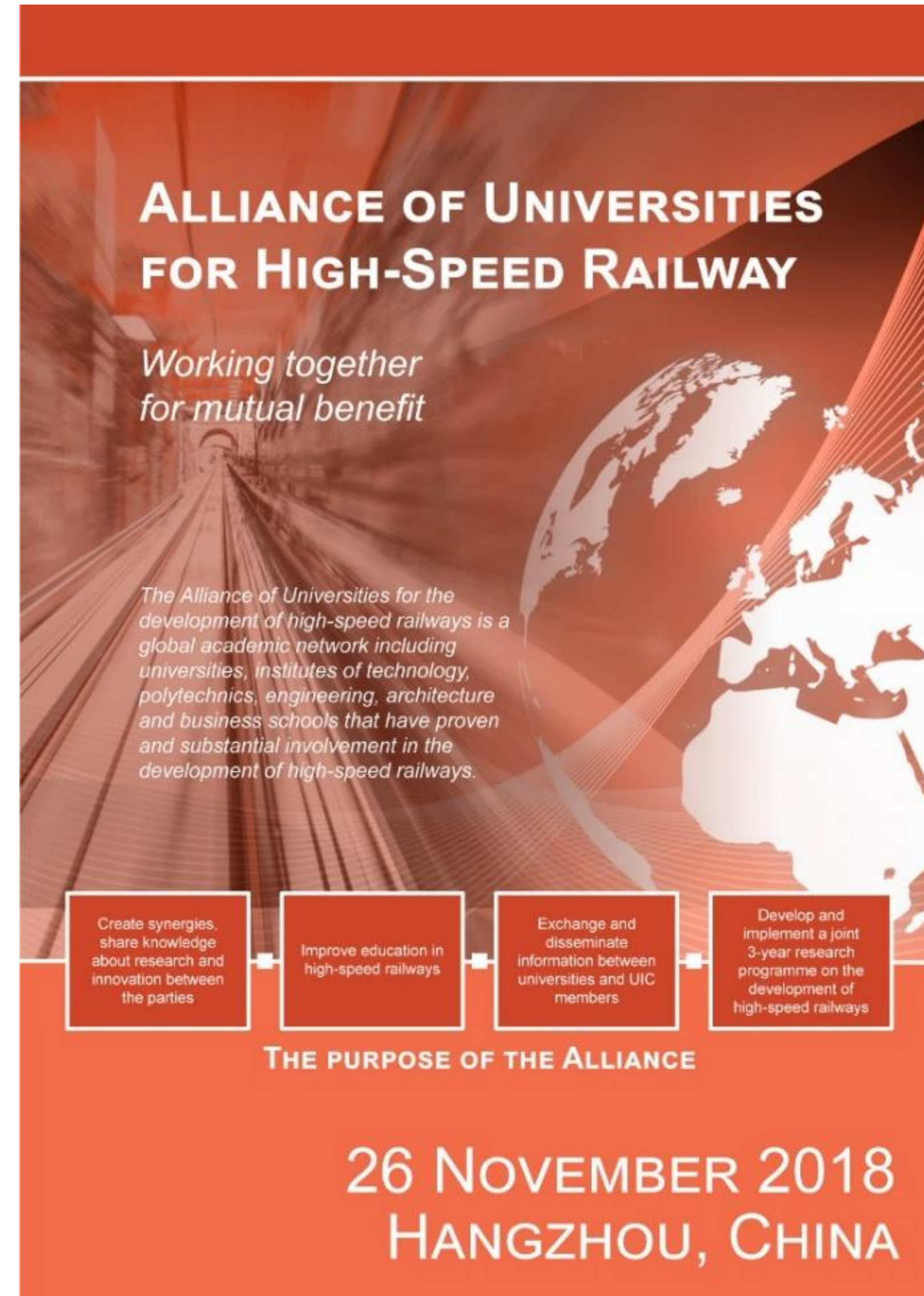


First results of the Alliance 3-year research programme will be presented at the World HS Congress 2020 Beijing

UIC - ALLAINCE OF UNIVERSITIES FOR HIGH-SPEED RAIL					
UNIVERSITY					
UNIVERSITY OF				LOGO	
Postal address					
Web Site					
Department of					
Postal address					
Laboratories					
Web Site					
Professor representing the Alliance:					
Name					
Address		tel. +			
e-mail		CV			
Training courses:					
1) Title:		Prof. name			
	Address	Tel.		CV	
2) Title:		Prof. name			
	Address	Tel.		CV	
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8) Title:		Prof. name			
	Address	Tel.		CV	
9) Title:		Prof. name			
	Address	Tel.		CV	
10) Title:		Prof. name			
	Address	Tel.		CV	



Banner for today's Alliance meeting and Poster Set by the UIC Communication Department





Banner sent to the 5th International Symposium on Railway Operation Research



The 5th International Symposium on Railway Operations Research

Topic of Symposium:
Improving the Efficiency and Economy of Rail Systems

Organizers:

- School of Traffic and Transportation, Beijing Jiaotong University
- State Key Laboratory of Rail Traffic Control and Safety (Beijing Jiaotong University)
- School of Civil Engineering, Beijing Jiaotong University

Organizing Committee:

- Lai He (Beijing Jiaotong University)
- Tao Yang (Beijing Jiaotong University)
- Lian He (Beijing Jiaotong University)
- Iago Herraiz (Vice President of International Association of Railway Operations Research)
- Liang Guo (Beijing Jiaotong University)
- Lingyun Wang (Beijing Jiaotong University)
- Xinpei Cai (Beijing Jiaotong University)

Event Details:

10th November
Road Check-in, Welcome Dinner

1st December
AM - Opening Ceremony, Presentation
PM - Presentation

2nd December
AM - Presentation
PM - Technical Visiting

Venue:
Jin Jiang Shen Zhen Hotel
Address: 1 Guang An Men Outer St., Xidiang District, Beijing, China

Topics of Presentations:

- A simple way to compute the number of vehicles that are required to operate a periodic timetable (Christian Liebchen, Technical University of Applied Sciences Witten)
- Dynamic driver advisory speed systems for train operations (Iago Herraiz, TU Delft)
- Multistage train classification problems at different hierarchical planning levels: Mathematical formulations and heuristic approaches (Toma Balkešević, University of Belgrade)
- A new constraint based scheduling model for real-time railway traffic management problems using conditional time intervals (Jorge Rodriguez, IFITTAU)
- Latest trends in passenger railway disruption management (Lorenz Peeters, Maastricht, Technical University Delft)
- Delay reduction and capacity planning techniques to route trains effectively for complex rail networks (Johannes H. D. D. University of Southern California)
- Single integrated transport in decision - the application of shortest paths (Mikael Ruz, K. König, TU Delft)
- Service efficiency and risk in railway capacity utilization (Rui Li, National Taiwan University)
- Potential safety benefits of connected vehicle technologies at the rail-highway crossings (Reginald S. S. University of Kentucky)
- Railway disruption management (Rob Donders, TU Delft)
- Scheduling railway operations of delayed trains with peak rate (Jozsef Miskolczi, University of Belgrade)
- Behavior of passenger train delays and estimation of network effects (Oliver Harrel, Technical University of Denmark)
- An activity-trip scheduling model incorporating timing constraints, resource timing and temporal coordination (Dany Zhang, Shandong University)
- Digitalization in the planning process of signaling facilities (Udo Muehl, TU Delft)
- On a few papers, Andrew Patterson, Ximeng Zhou, Christopher Batten — to be continued

The symposium is supported by T11 Project, China
The website: please contact the secretary (Ms. Wu of www.bjrt.org.cn)



ALLIANCE OF UNIVERSITIES FOR HIGH-SPEED RAILWAY

Working together for mutual benefit

The Alliance of Universities for the development of high-speed railways is a global academic network including universities, institutes of technology, polytechnics, engineering, architecture and business schools that have proven and substantial involvement in the development of high-speed railways.

THE PURPOSE OF THE ALLIANCE

- Create synergies, share knowledge about research and innovation between the parties
- Improve education in high-speed railways
- Exchange and disseminate information between universities and UIC members
- Develop and implement a joint 5-year research programme on the development of high-speed railways



Training on high-speed systems lev.1 and lev.2

Since 2004 UIC has successfully organised the annual UIC Training Sessions on High-Speed Systems (THSS) which have been attended by more than 300 students to date.

- **THSS Level I** consists of a series of theoretical sessions and a technical visit to integrate.
- **THSS Level II** goes more in-depth on the discussion with the help of a specific tool: the High-Speed Planner 4.0.

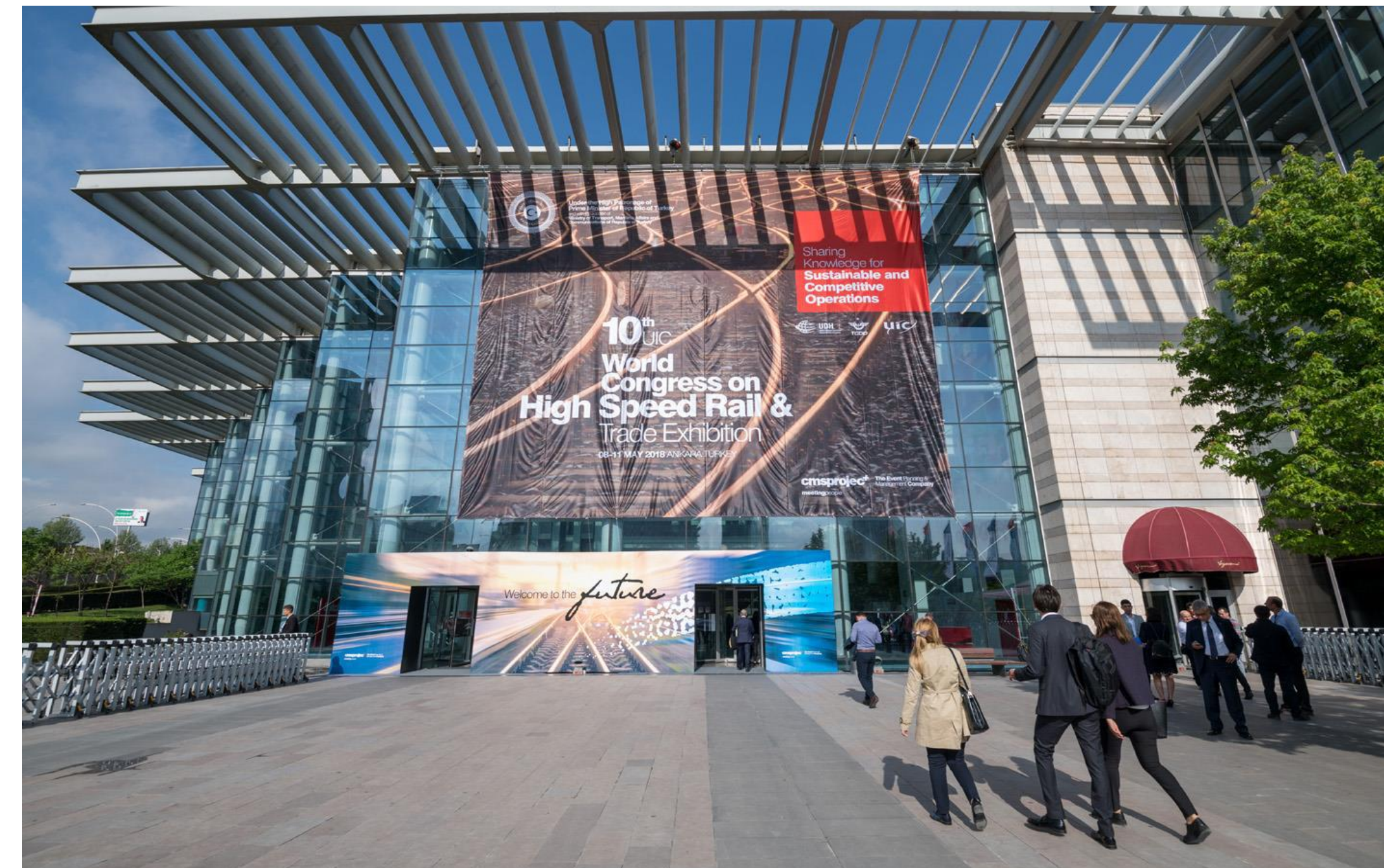




The UIC World Congress on High-Speed Rail

The high attendance, around 1,000 high speed rail professionals, from all continents

Participants include political decision-makers, representatives of governments, international institutions, key economical/financial/environmental organizations, financial institutions, industry research centers, universities, the global high-speed rail supply industry and the international press



NEXT: Beijing 2020
"Augmenting Intelligent Mobility"



International Railway Solutions: IRSs for high-speed rail

Technical harmonisation of the railway system has been a core objective of UIC, acting as an SSO (Standards Setting Organisation), since its creation in 1922.

Today the UIC produces IRSs which are in accordance with the business needs of the Railway Operating Community (ROC) and which are collaboratively and consensually agreed.

IRSs for high-speed rail are a subset of the whole IRSs and the Intercity & High-Speed Committee is responsible for them.



STANDARDISATION:

IRSs for high-speed rail



INTERNATIONAL UNION
OF RAILWAYS

Stay in touch with UIC!

www.uic.org



#UICrail

Thank you for your kind attention.