UIC

Intercity & High-Speed Committee

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THE EUROPEAN and THE ASIAN HIGH-SPEED NETWORK

High Speed Rail Network Evolution since 2000

<table>
<thead>
<tr>
<th>Region</th>
<th>Distance [km]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>36,372</td>
</tr>
<tr>
<td>Europe</td>
<td>9,176</td>
</tr>
<tr>
<td>Others</td>
<td>935</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46,483</strong></td>
</tr>
</tbody>
</table>

ASIA = ~78% total

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Main objectives:
- Co-ordinate High Speed Activities of UIC Members
- Contribute to the development of High Speed Rail around the world

ICHSC
Intercity & High Speed Committee

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

NEXT: Beijing 2020
“Augmenting Intelligent Mobility”
HIGH-SPEED SERVICES TO MEMBERS:
HIGH SPEED RAIL BROCHURE AND OTHER PUBLICATIONS
HIGH-SPEED SERVICES TO MEMBERS:
DATA BASES: HIGH-SPEED LINES, ROLLING STOCK, TRAFFIC, ETC.
HIGH SPEED RAIL MAPS
HIGH-SPEED SERVICES TO MEMBERS: BOOKS
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.
### 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 €

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### 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:**

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### 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:**

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### 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 HSR network thanks to interoperability

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

**Budget:**

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### 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
## UNIVERSITY

**UNIVERSITY OF … … … …**

Postal address … … … …

Web Site … … … …


### Department of … … … …

Postal address … … … …

Laboratories … … … …

Web Site … … … …


### Professor representing the Alliance:

**Name … … … …**

**Address … … … …**

Tel. + … … … …

**E-mail … … … …**

**CV**


#### Training courses:

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   **Prof. name … … … …**
   **Address … … … …**
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    **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
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
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.
Stay in touch with UIC!

www.uic.org

#UICRail

Thank you for your kind attention.