

## PRACTICAL INFORMATION

### LEVEL I



**Dates** Lectures from 23 to 27 April 2018  
Technical visit on Saturday 28 April

**Venue** UIC Headquarters  
16 rue Jean Rey - 75015 Paris, France

**Price\*** LEVEL I = €1,600

### LEVEL II



**Dates** Lectures from 10 to 14 December 2018  
Technical visits throughout the week

**Venue** Fundación de los Ferrocarriles Españoles  
c/ Santa Isabel, 44 -28012 Madrid, Spain

**Price\*** LEVEL II = €1,600

**PRICE LEVEL I + LEVEL II (30% discount) = €2,240**

Special discount for UIC members.

The organiser is in charge of logistics for the training session. Technical documents, domestic travel for technical visits and lunches are included. Travel to and from Paris and Madrid, accommodation and dinners are not included.

Technical visits: destination, subjects and possible costs TBC.

#### LANGUAGE

The training session will be held in English.

#### REGISTRATION

Register online via the UIC website:

▶ **Level I** <https://events.uic.org/14th-training-on-high-speed-systems-level-i>

▶ **Level II** <https://events.uic.org/6th-training-on-high-speed-systems-level-ii>

#### CONTACT

For registration and further details, please contact:

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**ALSTOM**

**via libre**  
The Spanish Railway Journal

**UIC**  
INTERNATIONAL UNION  
OF RAILWAYS

Check out the website:  
[www.uic.org/highspeed](http://www.uic.org/highspeed)

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INTERNATIONAL UNION  
OF RAILWAYS

**FUNDACIÓN DE LOS  
FERROCARRILES  
ESPAÑOLES**

# 6<sup>TH</sup> TRAINING ON HIGH SPEED SYSTEMS LEVEL II

## COLLABORATORS

All of our speakers are experts in the subjects presented and are drawn mainly from railways, universities and industry. They represent all of the world regions and countries with experience in the field of high-speed rail systems.

This training programme has been specially designed by the UIC Intercity and High Speed Committee. This group is composed of experts from all of the companies and countries involved in HSR systems, such as HS2, SNCF, DB, Trenitalia, FCH, FFE, IK, Oc'via, EUROSTAR, THALYS, RENFE, ADIF, RZD, PKP, AMTRAK, Euskotren, KORAIL, JR, CR, CARS, THSRC, Trafikverket, FTA, TCDD, ONCF, Mesea, etc.

# 10-14 Dec 2018 Madrid

# 23-27 April 2018 Paris

# 14<sup>TH</sup> TRAINING ON HIGH SPEED SYSTEMS LEVEL I

## TRAINING ON HIGH-SPEED RAIL SYSTEMS

By means of UIC member cooperation, around 50 participants are given the opportunity each year to interact with more than 40 high-level speakers during a week-long training session that reviews all of the components of a high-speed rail (HSR) system in detail. The Training on High Speed Rail systems (THSR) is aimed at decision-makers and is held every year, divided into two different stages.

**UIC**

INTERNATIONAL UNION  
OF RAILWAYS



## GENERAL CONTEXT

High-speed rail (HSR) is not just a single area of expertise, but a complex system combining wide-ranging technical fields such as infrastructure, rolling stock and operations with cross-disciplinary issues such as finance, business, management, communication and training.

Taking these factors into account, and often within the context of a challenging economic, political and social climate, managers need to make difficult decisions with potentially far-reaching consequences in the field of transport in general and in rail transport in particular.

Building and implementing a high-speed rail (HSR) is complex due to the numerous parameters, different potential combinations and variety of stakeholders involved.

To answer these questions and to satisfy the many requests for comprehensive and unbiased information on the subject from its own members as well as consultancy firms, ministries, railway companies, etc., UIC launched a dedicated course in 2004: **Training on High-Speed Rail systems (THSR)**.

Since then, more than 700 trainees have taken part in these annual sessions in order to learn and to share their experience with us (UIC members). **The 14<sup>th</sup> session of the Level I programme will be held in Paris in April 2018.**

Based on feedback from past participants, and at the request of UIC members, we introduced a second level of training in 2012. The second-level programme focuses on more in-depth, specific elements of HSR, with a particular emphasis on **theoretical aspects of fundamental issues** (standards, environment, modelling, etc.) and a more practical approach.

The second-level programme pays particular attention to **analysis and discussion of practical cases**, which can prove beneficial when making decisions in practice. A series of technical visits complements the course programme.

**The 6<sup>th</sup> edition of THSR Level II will be held in Spain in December 2018.** UIC is working in close cooperation with Spanish stakeholders in the field of HSR (Renfe Operadora, Adif, Fundación de los Ferrocarriles Españoles and Fundación Caminos de Hierro FCH and Talgo), to organise a number of technical visits, giving participants the opportunity to see real-life examples of system integration.

More detailed information on this innovative and unique training programme is provided below.

## TARGET AUDIENCE

This programme is aimed at professionals already involved in HSR processes or who are likely to become involved in HSR in the near future. Participants come from a variety of backgrounds: railway companies or ministries, local authorities, universities, advisory bodies, agencies or associations, industry, banks, etc. They may be managers, strategy experts, decision makers, economists, engineers, etc.

## CONDITIONS FOR PARTICIPATION

- ▶ The seminar is targeted towards all those in search of a comprehensive overview of HSR systems
- ▶ Seminar participants do not need in-depth knowledge of any specific subject relating to HSR
- ▶ Attendance at all sessions is mandatory
- ▶ Previous attendance of THSR Level I is recommended for participation in Level II but is not a prerequisite

## TESTIMONIALS

### (feedback on training from participants)

**“ PRACTICALITY**  
“I will use all this new knowledge to push forward HSR development in my home country.”  
“We could immediately apply the knowledge in the field. The visits gave a sense to everything we theoretically learnt.”  
“The High-Speed Planner in Level II is a great tool and it helps to better understand the importance of different parameters.”  
“Excellent coverage of the HSR elements, with interactions and practical exercises and very informative technical visits.”

**“ INTERNATIONAL NETWORK**  
“A very good opportunity to have operators, researchers, consultants, project managers worldwide in one room.”  
“It was really interesting to share experiences from all over the world.”  
“Great for “networking!””  
“I received a glimpse of HSR and met colleagues around Europe and the world.”

**“ GLOBAL APPROACH**  
“A general and technical approach that opens our minds to the sector; to the HSR.”  
“Good 360 approach to HSR.”  
“This training provided an excellent comprehensive view of all the fundamentals of a rail system (technical, economic...).”  
“Level I gave me a global vision of all the system. It combined perfectly with the practical experience of THSR level II.”

## OBJECTIVES

Both training levels complement each other; the first level is primarily theoretical, while the second level is more practical:

- | LEVEL I                                                                                                                                                                                                                                                                                                                                                                                                                                      | LEVEL II                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>▶ Provide a global vision of high-speed rail (HSR) for experts, with a focus on particular elements of the system</li><li>▶ Provide managers with all the information required to facilitate decision-making on the subject of HSR</li><li>▶ Define methodologies for HSR implementation</li><li>▶ Foster exchange of experiences and information about the latest developments in the field</li></ul> | <ul style="list-style-type: none"><li>▶ Provide in-depth and comprehensive insight into HSR</li><li>▶ Provide managers with all the information required to facilitate decision-making on the subject of HSR</li><li>▶ Discuss and develop practical HSR projects on the basis of HSR implementation methodologies</li><li>▶ Visit strategic points on the Spanish network</li></ul> |

## LEVEL I DRAFT PROGRAM

Paris, 23-27 April 2018

**THSR Level I:** The main objective is to provide an **accurate and comprehensive overview of high-speed rail (HSR) systems**. It consists of a series of theoretical sessions and a technical visit to integrate the knowledge acquired during the training.

The training programme will contain the following components:

### Introduction

- ▶ Main principles of HSR
- ▶ The conventional network – limits of conventional lines
- ▶ Description of HSR: in operation, under construction or planned in Europe and in other parts of the world

### Infrastructure

- ▶ Technical and administrative process required to build a new HS line (HSR handbook)
- ▶ Basic aspects, elements and parameters of the infrastructure
- ▶ Superstructure: the track, switchers, etc.
- ▶ Electrification
- ▶ Signalling, protection and safety, ERTMS-ETCS systems, telecommunications

### Rolling stock

- ▶ HSR rolling stock - main features
- ▶ Technology for traction
- ▶ Commercial requirements
- ▶ Certification, maintenance, economic aspects of HSR rolling stock

### Operations

- ▶ Basic operating principles for HS lines and trains
- ▶ Central control centres
- ▶ Operation with mixed traffic

### Fundamental Values

- ▶ Environmental aspects – sustainability and energy for HSR
- ▶ Extreme natural conditions on HSR
- ▶ Safety and security

### Customers

- ▶ Trends in HSR station location and city connections
- ▶ Prospects for passenger traffic developments in Europe
- ▶ Ticketing strategy
- ▶ Traffic forecast studies – modelling – results
- ▶ Impact of a HSR project on mobility
- ▶ Case studies: experience with HSR in revenue service



## LEVEL II DRAFT PROGRAM

Madrid, 10-14 December 2018

**THSR Level II:** The main objective is to provide an in-depth and comprehensive insight into the high-speed rail (HSR) system and to **discuss and develop practical HSR projects**. Visits to strategic points on a HSR system and onsite discussions will help to anchor the knowledge gained during the programme.

### INTRODUCTORY MODULE

Introduction to HSR (summary of basic THSR – Level I):

- ▶ Potential in the conventional network (“incremental rail speeds”)
- ▶ General approach to HSR
- ▶ Overview of HSR systems around the world
- ▶ High-speed implementation handbook

### THEORETICAL SESSIONS

Each theoretical session will consist of a presentation on the several strategic concepts necessary for HSR project development. There will be at least one 30-minute presentation on each topic.

The strategic subjects are:

- ▶ **Environment:** Presentation of UIC research on the contribution of HSR to sustainable mobility and carbon balance.
- ▶ **Stations for HSR systems:** Presentation of UIC research on HSR and cities.
- ▶ **Traffic forecasting:** Basic principles of modelling and its application to HSR prospecting.
- ▶ **Standards for HSR systems:** Requirements, definitions, different types of standards, various “families” of rail standards.
- ▶ **Other fundamental values for HSR projects:**
  - Basic principles for comprehensive planning and processes for HSR project development.
  - Fundamental elements of HSR (safety, security, RAMS [reliability, availability, maintainability and safety], quality, management, lifecycle costs, etc.), integration concepts.

### CASE STUDIES

During the training, and on an alternating basis with the various theoretical sessions, participants will be divided into groups of five (maximum) to develop and discuss a real example of a HSR project, led by a supervisor.

In this practical exercise, participants will go through each of the steps required to define and plan a real HSR project, right up to final configuration of basic parameters and implementation of actions. The training session will conclude with a presentation and final group discussion.

Each group participant will take on a different role (operator, infrastructure manager, government) and will develop the various actions required. The session will conclude with a plenary discussion to compare the various solutions.

**THSR II participants will have an opportunity to use the HIGH-SPEED PLANNER as part of their training to simulate a real HSR project. The HIGH-SPEED PLANNER is a didactic and dynamic tool, specifically designed for use as a complement during training on HSR. It enables users to develop hypotheses considering the main parameters to be implemented**



**in every HSR project. All of the key elements (social, economic and environmental) will be analysed to facilitate decision-making and to visualise the resulting outcomes.**

### TECHNICAL VISITS

In partnership with Renfe, ADIF and other stakeholders, a series of technical visits will be organised to complement the theoretical knowledge gained and the various parameters examined during the practical case study.

The training seminar will be held in Madrid, with a number of technical visits in different cities. Information will be provided well in advance, and our team of organisers will take care of all the logistics.