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# The future of rail transport, operations & sustainability

## A core theme of the 17th World Conference on Transport Research

World Conference on Transport Research
Toulouse 2026

# Interdisciplinary Perspectives & Advances in Contemporary Rail Research

This year's program illustrates the diverse range of rail-related research ranging from Metros to Maglev and covering both passenger and freight, along with specialist offerings such as airport expresses, night trains and intermodal services.

Topics covered include engineering topics related to vehicles and infrastructure, studies of operational practices and performance outcomes, and more general assessments of rail policy and funding, including the role of public private partnerships.
The methods used reflect the interdisciplinary nature of rail research, ranging from economic history to state-of-the art data science.

With case studies from around the globe, participants will appreciate  the rich and dynamic nature of contemporary rail research and its ability to inform evolving practices.

# Leading the Way in Rail Innovation

Participants will gain actionable perspectives on rail operations, infrastructure optimization, passenger demand, and sustainability.

> ***Crossing disciplines and continents, this conference invites you to explore a rich and dynamic field of railway research: a unique opportunity to find inspiration, exchange ideas, and contribute to the sector's evolution.***

**John Preston**
WCTR Rail Special Interest Group Co-Chair
Professor of Rail Transport at the University of Southampton, UK

**www.wctr2026.fr**

# Conference sessions at a glance

Research contributions related to rail transport can be grouped into 6 major thematic tracks :

**Rail Policy, Investment & Economic Impact**
Transport Policy, Planning and Financing in Developing Countries, Transport System Analysis and Economic Evaluation

**Rail Operations, Performance & Infrastructure Optimization**
Traffic Modelling/Optimization and Traffic Flow, Traffic Safety Analysis and Policy, Intelligent Transport Systems

**Urban Rail Systems, Stations & Multimodal Integration**

**Travel Behaviour, Demand & Passenger Experience**

**Freight Transport, Logistics & Intermodality**

**High Speed Rail: policy, investment and impacts**

Icone by Kalashnyk & Bsd

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# High-Speed Rail : Policy, Investment & Impact

**Pr. Yoshitsugu Hayashi**

Nagoya University, Japan

**Dr. K E Seetha Ram**

ADB Institute & The University of Tokyo

***This special session offers a unique opportunity to bring together international experts for an in-depth discussion on advancements and practices in high-speed rail, sharing national experiences and global perspectives, while drawing key lessons from the first projects carried out around the world.***

**Pr. Yoshitsugu Hayashi & Dr. K E Seetha Ram**

WCTR Rail Special Interest Group Co-Chair

Image Source: https://tetsudo-ch.com/1239777.html

# ANNEX – DETAILED PROGRAM

## Selection of presentation sessions focusing on rail transport

See our website for plenary sessions and keynote speeches

# Rail Policy, Investment & Economic Impact

## Traffic Safety Analysis and Policy

- Systematic Underestimation of Crashes at rail Crossings in the United States

## Traffic Theory and Modelling/Optimization and Traffic Flow

- Short-term insertion of an additional train into an existing timetable
- Service optimization for cross-line suburban rail with heterogeneous passenger choices

## Intelligent Transport Systems

- Towards trustworthy engineering decisions: an explainable vibration prediction framework for intelligent maintenance of high-speed maglev

## Urban Transport operations

- A Comparative Study of Turnouts and Their Impact on Train Delays in Japan and Sweden
- Optimal massive multimodal evacuation: Formulations, data-driven algorithms and an application to railway disruption

# Rail Operations, Performance & Infrastructure Optimization

## Transport Policy, Planning and Financing in Developing Countries

- Short-haul ban or zero-emission aircraft? Balancing social welfare and emissions control
- Comparing air transport decarbonisation policies using a sectoral assessment model

## National and Regional Transport Planning & Policy

- Factors influencing the success of intercity freight and passenger railway projects. A multicriteria hierarchical analysis (AHP) approach
- Keeping it Together: successive efforts to redress the fragmentation of Britain’s privatised railways

## Transport System Analysis and Economic Evaluation

- The Asymmetric Impact of Sustainable Aviation Fuel Adoption on Airline Industry
- Modeling and calibration of aggregate aviation demand for climate mitigation scenarios
- Walking the walk or talking the talk? Using NLP methods to analyse airport sustainability discourse
- Exploring The Best Strategy for the Air Cargo Industry Under Different Net-Zero Scenarios
- A Machine Learning Framework for Predicting and Spatially Mapping Aircraft Noise

# Freight Transport, Logistics & Intermodality

## Freight Transport Modelling

- A data-driven decision support framework for freight wagon wheelset maintenance
- A truncated stochastic user equilibrium model with endogenous thresholds and service capacity constraint for road-rail intermodal network

## Freight Transport Operations and Intermodality

- Asset Acquisition and Rental in Containerised Single Wagon Load Transport – Case Study
- A simulation-optimisation framework for dynamic fleet management in autonomous rail-based pod transport system

# Urban Rail Systems & Multimodal Integration

## Urban Transport Planning and Policy

- New Airport Access Railway Project in Tokyo Metropolitan Area
- An integrated macroscopic-microscopic modelling framework for the design and management of railway stations as multimodal hubs.
- Understanding Departure Time Decisions for Urban Rail Commuters

# Travel Behaviour, Demand & Passenger Experience

## Applications of Travel Behaviour Analysis and Demand

- Counting sleepers: a demand model for night trains in Central Europe based on actual travel data
- Passenger Satisfaction in Transition: Segmental Disparities in Rail Experience Post-Pandemic
- A Station-to-Station Ridership Model for Metro Rail Systems: Application to Bengaluru Metro

## Travel Behaviour and Choice Modelling

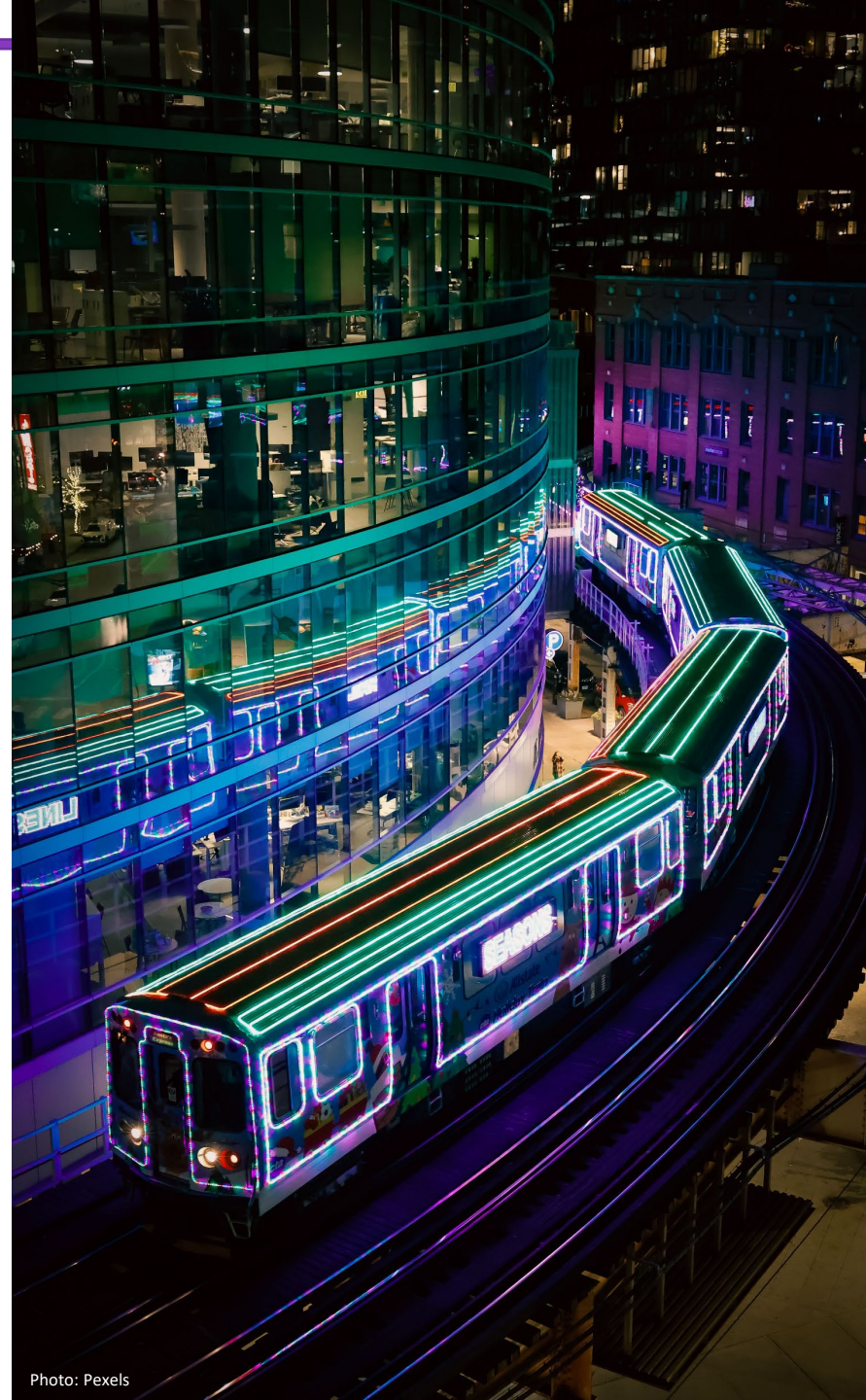
- Why Do Metro Travelers Choose Non-Nearest Stations? Exploring Station Choice Behavior from a Whole-Trip Perspective Using Machine Learning Method

# High Speed Rail: Policy, Investment & Impacts

- Can High-Speed Rail Have Wider Economic Impacts? Evidence from the UK
- Proximity, Travel Behavior, and TOD Effectiveness: Insights from Mobile Phone Data Around a Major High-Speed Railway Hub
- A theory of optimal investment timing in railways

- Analysing Adoptation behavior and travel preferences for upcoming high-speed rail in India
- High-speed rail reshapes intercity weekly commuting patterns: Evidence from real-time train ticket availability in China
- Synergistic effects of access to high-speed rail and airports on local land prices: a case study of Hokuriku Shinkansen, Japan

- Head-on competition in the French high-speed rail market: can Trenitalia prove the transport economists wrong?
- A data-driven causal analysis of the impact range and spatial heterogeneity of Japan’s high-speed railway
- High-Speed Rail and Population Agglomeration in China



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