## Sunday, May 22nd

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>4:00 pm</td>
<td>OPENING WELCOME DESKS</td>
</tr>
<tr>
<td>6:00 pm</td>
<td>WELCOME RECEPTION</td>
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<tr>
<td>6:00 pm</td>
<td>OPENING WELCOME DESKS</td>
</tr>
<tr>
<td>9:00 pm</td>
<td>WELCOME RECEPTION</td>
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</tbody>
</table>

## Monday, May 23rd

### Opening Session - Auditorium Vauban

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:30 am</td>
<td>OPENING SESSION - Auditorium Vauban</td>
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<tr>
<td>9:30 am</td>
<td>PLENARY SESSION 1: More services, more trains - Auditorium Vauban</td>
</tr>
<tr>
<td>10:30 am</td>
<td>Poster Session &amp; Coffee Break - Exhibition Hall</td>
</tr>
</tbody>
</table>

**Challenge D: A world of services for passengers**
- Room Pasteur: D. SANZ, J. GOIKOETXEA
- Room Artois: D1: Simplifying travel using IT, D2: Design for comfort

**Challenge E: Bringing the territories closer together at higher speeds**
- Room Van Gogh 1: E. FONTANEL, E1: High speed development
- Room Rubens: J. LANE, E2: Track & bridges maintenance

**Challenge F: Even more trains even more on time**
- Room Van Gogh 2: D. DE ALMEIDA, F1: Timetable planning & route conception for flow optimization

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>11:00 am</td>
<td>Challenge D: A world of services for passengers</td>
</tr>
<tr>
<td></td>
<td>Room Pastuer: D. SANZ, J. GOIKOETXEA</td>
</tr>
<tr>
<td></td>
<td>Room Artois: D1: Simplifying travel using IT, D2: Design for comfort</td>
</tr>
<tr>
<td>12:40 pm</td>
<td>Lunch Break</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>Challenge D: A world of services for passengers</td>
</tr>
<tr>
<td></td>
<td>Room Pastuer: K. GOTO, M. GRIFFIN</td>
</tr>
<tr>
<td></td>
<td>Room Artois: D3: Better information using IT, D4: Passenger comfort: measurement techniques</td>
</tr>
</tbody>
</table>

### Poster Session & Coffee Break - Exhibition Hall

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>4:10 pm</td>
<td>Challenge C: Increasing freight capacity and services</td>
</tr>
<tr>
<td></td>
<td>Room Van Gogh 1: M. RONEY, Room Van Gogh 2: G. THELEN</td>
</tr>
</tbody>
</table>

### Symposium Lucchini: Structural reliability assessment of railway axles - Room Van Gogh

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>6:45 pm</td>
<td>SYMPOSIUM LUCCHINI: Structural reliability assessment of railway axles - Room Van Gogh</td>
</tr>
</tbody>
</table>

**End of Monday**
**Tuesday, May 24th**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
<th>Speakers</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 am</td>
<td><strong>PLENARY SESSION 2: Economics and environment - Auditorium Vauban</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>9:30 am</td>
<td><strong>Challenge A:</strong> A more and more energy efficient railway</td>
<td>Room Van Gogh 1</td>
<td>U. HENNING D. KNIGHTS</td>
<td></td>
</tr>
<tr>
<td>9:30 am</td>
<td><strong>Challenge B:</strong> An environmentally friendly railway</td>
<td>Room Van Gogh 2</td>
<td>A1: Hybrid Systems</td>
<td></td>
</tr>
<tr>
<td>9:30 am</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Artois</td>
<td>A2: Energy &amp; whole system design</td>
<td></td>
</tr>
<tr>
<td>9:30 am</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Rubens</td>
<td>B1: EMC &amp; Electrical issues</td>
<td></td>
</tr>
<tr>
<td>9:30 am</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Pasteur</td>
<td>B2: Noise &amp; Vibration I</td>
<td></td>
</tr>
<tr>
<td>9:30 am</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>E. MANIER</td>
<td>G1: Infrastructure design</td>
<td></td>
</tr>
<tr>
<td>11:10 am</td>
<td><strong>Poster Session &amp; Coffee Break - Exhibition Hall</strong></td>
<td></td>
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</tr>
<tr>
<td>11:30 am</td>
<td><strong>Challenge A:</strong> A more and more energy efficient railway</td>
<td>Room Van Gogh 1</td>
<td>P. DESAUNAY H. SCHWARZ</td>
<td></td>
</tr>
<tr>
<td>11:30 am</td>
<td><strong>Challenge B:</strong> An environmentally friendly railway</td>
<td>Room Van Gogh 2</td>
<td>A3: Rolling stock design</td>
<td></td>
</tr>
<tr>
<td>11:30 am</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Artois</td>
<td>A4: Energy efficiency</td>
<td></td>
</tr>
<tr>
<td>11:30 am</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Rubens</td>
<td>B3: Noise &amp; Vibration II</td>
<td></td>
</tr>
<tr>
<td>11:30 am</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Artois</td>
<td>B4: Materials for infrastructure</td>
<td></td>
</tr>
<tr>
<td>11:30 am</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Artois</td>
<td>G2: Maintenance strategy</td>
<td></td>
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<tr>
<td>1:10 pm</td>
<td><strong>Lunch Break</strong></td>
<td></td>
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<tr>
<td>2:10 pm</td>
<td><strong>Poster Session &amp; Coffee Break - Exhibition Hall</strong></td>
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</tr>
<tr>
<td>3:50 pm</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Van Gogh 1</td>
<td>H. TOURNAY J. AMOORE</td>
<td></td>
</tr>
<tr>
<td>3:50 pm</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Van Gogh 2</td>
<td>A5: Electrification</td>
<td></td>
</tr>
<tr>
<td>3:50 pm</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Van Gogh 2</td>
<td>A6: Eco driving</td>
<td></td>
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<tr>
<td>3:50 pm</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Van Gogh 2</td>
<td>B5: Aerodynamics</td>
<td></td>
</tr>
<tr>
<td>3:50 pm</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Van Gogh 2</td>
<td>B6: Fuel cell &amp; battery technology</td>
<td></td>
</tr>
<tr>
<td>3:50 pm</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Van Gogh 2</td>
<td>G3: Economic efficiency</td>
<td></td>
</tr>
<tr>
<td>4:10 pm</td>
<td><strong>Challenge G:</strong> An even more competitive &amp; cost efficient railway</td>
<td>Room Van Gogh 2</td>
<td>G4: Rolling Contact Fatigue</td>
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<tr>
<td>5:50 pm</td>
<td><strong>END OF TUESDAY</strong></td>
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<tr>
<td>7:00 pm</td>
<td><strong>GALA DINNER</strong></td>
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### Wednesday, May 25th

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 am</td>
<td><strong>PLENARY SESSION 3: Meeting the challenges for future transportation needs - Auditorium Vauban</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Challenge C:</strong> Increasing freight capacity and services</td>
</tr>
<tr>
<td></td>
<td>Room Van Gogh 1 S. FLETCHER</td>
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<tr>
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<td>Room Van Gogh 2 S. GUIDI</td>
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<tr>
<td>10:00 am</td>
<td><strong>Challenge H:</strong> For an even safer and more secure railway</td>
</tr>
<tr>
<td></td>
<td>Room Pasteur J. MAYER</td>
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<tr>
<td></td>
<td>Room Rubens K. TAYLOR</td>
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<td></td>
<td>Room Artois C. SEVESTRE</td>
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<tr>
<td></td>
<td>C3: Improved operation &amp; maintenance for safe and increased freight services</td>
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<tr>
<td></td>
<td>C4: High performing wheels &amp; rails for freight</td>
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<tr>
<td></td>
<td>H1: Rolling stock monitoring</td>
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<td></td>
<td>H2: Safety general issues</td>
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<tr>
<td></td>
<td>H3: Signalling</td>
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<tr>
<td>11:00 am</td>
<td>Poster Session &amp; Coffee Break - Exhibition Hall</td>
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<tr>
<td>11:30 am</td>
<td><strong>Challenge H:</strong> For an even safer and more secure railway</td>
</tr>
<tr>
<td></td>
<td>Room Rubens P. SCHMITT</td>
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<td></td>
<td>Room Artois A. HECHENBERGER</td>
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<td></td>
<td>Room Pasteur R. ALLEN</td>
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<td></td>
<td>Room Van Gogh 1 A. SEMERANO</td>
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<td>Room Van Gogh 2 B. INDRARATNA</td>
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<tr>
<td></td>
<td>H4: Structures</td>
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<td>H5: ERTMS / ETCS</td>
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<td></td>
<td>H6: Risk / safety management</td>
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<td></td>
<td>H7: Track Inspection</td>
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<td>H8: Track condition monitoring</td>
</tr>
<tr>
<td>1:10 pm</td>
<td>Lunch Break</td>
</tr>
<tr>
<td>2:30 pm</td>
<td><strong>Challenge H:</strong> For an even safer and more secure railway</td>
</tr>
<tr>
<td></td>
<td>Room Artois F. LOMBARDO</td>
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<td>Room Rubens G. MANCINI</td>
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<td></td>
<td>Room Pasteur F. DEMARIA</td>
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<td></td>
<td>H9: Wheel Rail</td>
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<td>H10: Cross wind issues</td>
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<td>H11: Rolling Stock general issues</td>
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<tr>
<td>3:30 pm</td>
<td><strong>PRIZES &amp; CLOSING SESSION</strong></td>
</tr>
<tr>
<td>4:30 pm</td>
<td><strong>END OF WEDNESDAY</strong></td>
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### Thursday, May 26th

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>8:00 am</td>
<td>TECHNICAL VISITS</td>
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<tr>
<td>5:00 pm</td>
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</tbody>
</table>
Monday, May 23rd

8:30 am
9:30 am

**Opening Session**

**Moderator:** Monika Jones

1. Guillaume Pepy, *President of SNCF, France*
2. Martine Aubry, *Lille Mayor, France*
3. Matthias Ruete, *European Commission, Director General for Mobility and Transport, Brussels*
4. Dominique Riquet, *Vice-chairman of the European Parliament Committee on Transport and Tourism - Valenciennes Mayor, France*
5. Yoshio Ishida, *Chairman of International Union of railways (UIC) - Vice-chairman East Japan Railway Company*
6. Daniel Percheron, *President of Nord Pas de Calais regional council, France*

9:30 am
10:30 am

**Plenary Session 1**

**More services, more trains**

**Moderator:** Monika Jones

**Main issues:** Anson Jack, *Organising Committee member of WCRR 2011 - Director of Policy, Research & Risk, RSSB, UK*

**Round Table:**
- Barbara Dalibard, *Chief Executive Officer of SNCF Voyages, France*
- Anson Jack, *Director of Policy, Research & Risk, RSSB, UK - Organising Committee member of WCRR 2011*
- François Lacôte, *Senior Vice President, Technical Advisor, Alstom Transport, France*
- Anthony Smith, *Chief Executive, Passenger Focus, UK*
- Gerhard Thelen, *Vice President Operations Planning & Support, Norfolk Southern Corporation, USA*

10:30 am
11:00 am

**Poster session and coffee break**

*offered by* SNCF

11:00 am
12:40 pm

**Oral sessions** *(details on pages 17-19)*

Challenge D: A world of services for passengers
Challenge E: Bringing the territories closer together at higher speeds
Challenge F: Even more trains even more on time
11:00 am - 12:40 pm

**Challenge D: A world of services for passengers**

**D1: Simplifying travel using IT**

**Chair:** David SANZ, SNCF - France

- **11:00** Improving Railway Vehicle Accessibility for all mobility reduced
  
  B. Rueger, Vienna University of Technology, Austria
  
  G. Simic, University of Beograd, Serbia

- **11:20** Ageing and mobility: challenges for a sustainable future
  
  R. Palacin, J. Bond, Newcastle University, UK

- **11:40** Guiding visually impaired people - Experimentation with a RFID cane
  
  S. Gitton, SNCF, France

- **12:00** IT Applications in the New Generation Korean High-Speed Train
  
  DJ. Chang, DH. Song, Woosong University, Korea

- **12:20** New customers services based on contactless technologies
  
  P. Galtier, D. Sanz, SNCF, France

**D2: Design for comfort**

**Chair:** Javier GOIKOETXEA, CAF - Spain

- **11:00** Transfer path analysis within the TGV Duplex driver cab, platforms, upper and lower rooms from 150 to 360 km/h
  
  F. Poisson, SNCF France - O. Coste, Signal Développement, France
  
  S. Bouvet, N. Vincent, Vibratec, France

- **11:20** Measurement of Velocity and Pressure Fluctuations around High-Speed Train Running in Tunnel
  
  Y. Sakuma, M. Suzuki, Railway Technical Research Institute, Japan

- **11:40** Development of primary suspension damping control system for suppressing vertical bending vibration of railway vehicle car body
  
  Y. Sugahara, N. Watanabe, T. Takigami, R. Koganei, Railway Technical Research Institute, Japan

- **12:00** Suppression of Low-frequency Lateral Vibration in Tilting Vehicle Controlled by Pneumatic power
  
  A. Kazato, S. Kamoshita, Railway Technical Research Institute, Japan

- **12:20** Improvement of lighting ambience onboard trains: experimental results on the correlation between light parameters and seat colors
  
  C. Talotte, S. Segretain, SNCF France - J. Gonac’h, LCPE-LAM, France
  
  J. Le Rohellec, MNHN-CRCC, France
Monday, May 23rd

11:00 am - 12:40 pm

**Challenge E: Bringing the territories closer together at higher speeds**

**E1: High speed development**

**Chair:** Eric FONTANEL, UNIFE

- **11:00** The UNICHANGER Project: A unique approach to eliminate rail frontiers due to the variable gauge
  
  *I.J. Iglesias, R. San Damaso, A. Ortega, LF. Almenara, ADIF*
  
  *L. Campillo, Ineco-Tifsa - F. Paños, Tria - I. Nieva, Talgo - J. Goikoetxea, CAF*
  
  *S. Lopez, Tria - L. Arranz, A. Garcia, Spanish Railways Foundation, Spain*

- **11:20** TGV at 360 km/h: A research program following a test campaign
  
  *PE. Gautier, SNCF, France*

- **11:40** Achieving the same headway whilst increasing the speed from 300 km/h to 360 km/h
  
  *C. Aulagnier, D. Deau, SNCF, France*

- **12:00** Why are the effects of High-Speed rail Service so different according to places?
  
  *M. Delaplace, Reims Champagne Ardennes University, France*

**E2: Track & bridges maintenance**

**Chair:** John LANE, RSSB - UK

- **11:00** A numerical tool for masonry arch bridges assessment
  
  *T. Stablon, A. Sellier, N. Domède, LMDC, France*
  
  *B. Plu, L. Dieleman, SNCF, France*

- **11:20** Non destructive assessment of internal defects in concrete sleepers of high-speed railway in Korea
  
  *S.K. Hwang, KRRI, Korea - SH Joh, Chung-Hang University, Korea*
  
  *TH. Kang, CS. Park, KRRI, Korea*

- **11:40** Correlation between subgrade reaction modulus (K30) and strain modulus (Ev2)
  
  *K. Dae-Sang, KRRI, Korea*
  
  *P. Seong-Yong, P. Jong-Sik, Hanwha Engineering and Construction, Korea*

- **12:00** Scheduling tamping through global optimization of maintenance costs
  
  *C. Vale, I. Ribeiro, Faculty of Engineering of University of Porto, Portugal*

- **12:20** The long spanned bridge for deflection-restricted high speed rail - SANNAI-MARUYAMA Bridge
  
  *K. Shimizu, Japan International Transport Institute, Japan*
  
  *S. Tamai, Japan Railway construction, Transport and Technology Agency, Japan*
Challenge F: Even more trains even more on time

F1: Timetable planning & route conception for flow optimization

Chair: David DE ALMEIDA, SNCF - France

- 11:00 Improving the train diagram of Tokaido Shinkansen, Development of New Timetable Planning System
  K. Fukami, S. Komatsu, Central Japan Railway Company, Japan
  T. Seki, JR Tokai Information Systems Company, Japan
  A. Saito Toshiba Corporation, Japan

- 11:20 Increasing Robustness of Dense Timetables by Visualization of Train Traffic Record Data and Monte Carlo Simulation
  N. Tomii, Chiba Institute of Technology, Japan

- 11:40 Modelling of pedestrian flows during dwelling: development of a simulator to evaluate rolling stock and platform flow performance
  F. Sourd, C. Talotte, C. Ambroise, Y. Constans-Brugeais, SNCF, France
  A. Pillon, S. Donakian, GOLAEM SA, France

- 12:00 Investigation and Estimation of Train Dwell Time for Timetable Planning
  JC. Jong, EF. Chang, Sinotech Engineering Consultants, Taiwan

- 12:20 Intelligent Network Traffic Management in Emergency Situations
  F. Corman, IA. Hansen, Delft University of Technology, the Netherlands
  A. D’Ariano, Università degli Studi Roma Tre, Italy

12:40 pm - 2:30 pm

Lunch break offered by BOMBARDIER

2:30 pm - 4:10 pm

Oral sessions (details on pages 20-22)

Challenge D: A world of services for passengers
Challenge E: Bringing the territories closer together at higher speeds
Challenge F: Even more trains even more on time
**Challenge D: A world of services for passengers**

**D3: Better information using IT**

**Chair:** Koichi GOTO, RTRI - Japan

- **2:30** Delivering broadband internet access for high speed trains passengers using the new WiFi standard 802.11n for train-to-ground communications
  
  *H. Ghannoum, D. Sanz, H. Philippe, P. Mercier, SNCF, France*
  
  *B. Villeforceix, Orange Labs, France*

- **2:50** Development of Mobile Broadband Telecommunication System for Railways Using Laser Technology
  
  *S. Nakagawa, H. Matsubara, K. Seki, K. Nakamura, D. Tatsui, RTRI, Japan*
  
  *S. Haruyama, F. Teraoka, Keio University, Japan*

- **3:10** Utilization of Mobile Phones in Information System on Trains for Private Customers
  
  *T. Matsumoto, M. Matsunaga, East Japan Railway Company, Japan*
  
  *J. Kimura, S. Harada, Y. Higashino, Mitsubishi Electric Corporation, Japan*

- **3:30** Development of 100Mbps-Ethernet-based Train Communication Network
  
  *J. Kawasaki, M. Sugaya, Y. Mizuguchi, A. Sobue, K. Hoshino, East Japan Railway Company, Japan*

**D4: Passenger comfort: measurement techniques**

**Chair:** Mike GRIFFIN, University of Southampton - UK

- **2:30** Acoustic comfort inside trains: detection of spectral emergences
  
  *C. Gallais, F. Poisson, SNCF, France - F. Dubois, LMA, France - C. Talotte, SNCF France*

- **2:50** Acoustic comfort indicator for the assessment of interior noise in high-speed trains in Korea
  
  *S. Choi, KRRI, Japan - J. Park, D. Kim, B. Park, Hanyang University, Korea*
  
  *C. Park, KRRI, Japan*

- **3:10** Frequency weightings for the evaluation of discomfort of standing passengers on trains
  
  *C. Gallais, SNCF, France - H. Ohno, RTRI, Japan - C. Talotte, SNCF, France*

- **3:30** A socio-economic study of platform and carriage crowding in the Australia metropolitan railway industry
  
  *K. Thompson, L. Hirsch, S. Rainbird, S. Mueller, N. Holyoak, M. Thomas, D. Dawson, University of South Australia*
  
  *V. Sharma-Brymer, R. Galiza, Queensland University of Technology*
  
  *K. Titchener, Griffith University, Australia*

- **3:50** Measurement and Analysis of Passenger’s Fatigability in KTX Seating Environment
  
  *JO. Lee, KORAIL, Korea - L. Myounho, Yonsei University, Korea*
Challenge E: Bringing the territories closer together at higher speeds

E3: Pantograph Catenary Interaction

Chair: Alessio GAGGELLI, Trenitalia - Italy

- 2:30 Design of pantograph-catenary systems by simulation
  A. Bobillot, JP. Massat, JP. Mentel, SNCF, France

- 2:50 INDICA: An efficient tool to study the dynamical pantograph-catenary interaction
  J. Benet, T. Rojo, P. Tendero, University of Castilla-La Mancha, Spain
  J. Montesinos, M. Gil, ADIF, Spain

- 3:10 Advanced active control of a contact force between a pantograph and a catenary for a high-speed train
  Y. Yamashita, I. Mitsuru, K. Tatsuya, RTRI, Japan
  M. Arata, I. Daisuke, F. Kazusaku, Kyoto Institute of Technology, Japan

- 3:30 Fatigue analysis of catenary contact wires for high speed trains
  JP. Massat, TNL. Nguyen, S. Daouk, A. Bobillot, SNCF, France
  H. Maitournam, Ecole Polytechnique, France

- 3:50 Prediction of Contact Wire Wear in High-speed Railways
  T. Usuda, M. Ikeda, Y. Yamashita, RTRI, Japan

E4: Wheel & track constraints

Chair: Bernard GUIEU, Alstom Transport - France

- 2:30 Study on Narrow Gauge Track Mechanics for Speeding-up to 160 km/h
  E. Conles, M. Novales, University of A Coruña, Spain

- 2:50 Influential factors on Adhesion between Wheel and Rail under Wet Conditions
  H. Chen, I. Makoto, RTRI, Japan
  N. Tsunamitsu, Tokyo Institute of Technology, Japan

- 3:10 Characterization and Modeling of Flying Ballast Phenomena in High Speed Train Lines
  B. Lazaro, E. Gonzalez, Universidad Politecnica de Madrid, Spain
  Ma. Rodriguez, Sener, Spain
  Mi. Rodriguez, S. Osma, IJ. Iglesias, ADIF, Spain

- 3:30 Design of a new full scale test-rig for the calibration of instrumented wheelsets
  E. Di Gialleonardo, F. Braghin, G. Diana, F. Resta, M. Bocciolone, P. Crosio,
  Politecnico di Milano, Italy

- 3:50 Dynamic simulation of the system pantograph-catenary-vehicle-track
  A. Carnicero, C. Sanchez-Rebollo, JR. Jimenez-Octavio,
  Universidad Pontificia Comillas, Spain
Monday, May 23rd

2:30-4:10 pm

**Challenge F: Even more trains even more on time**

**F2: Train control & signalling for capacity**

**Chair:** Shigeto HIRAGURI, RTRI - Japan

- **2:30** Headways on high speed lines  
  *D. Emery, Ecole Polytechnique Fédérale de Lausanne, Suisse*

- **2:50** How to achieve economic traffic in a growing ERTMS infrastructure world  
  *C. Gralla, DB Fernverkehr AG, Germany*

- **3:10** European railway traffic management system (ERTMS) of level 2: from GSM-R to GPRS  
  *E. Marzili, M. Ciaffi, F. Senesi, D. Schiavoni, D. Caronti, RFI S.P.A, Italy*

- **3:30** Multiple Sensor Automatic Train Control System Implementation in FPGA  
  *J. Khan, CS. Tatkeu, P. Deloof, INRETS, France*

- **3:50** Signalling architecture for railway infrastructure - System integration point of view  
  *N. Ammad, M. Antoni, SNCF, France*

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**Poster session and coffee break**

*offered by SNCF*

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**Oral sessions** (details on pages 23-25)

**Challenge C:** Increasing freight capacity and services

**Challenge E:** Bringing the territories closer together at higher speeds

**Challenge F:** Even more trains even more on time
**Challenge C: Increasing freight capacity and services**

**C1: New technologies for heavy haul**

Chair: Mike Roney, CPR - Canada

- **4:40** Development of Enabling Technologies for Heavy Axle Loads  
  S. Kalay, J. LoPresti, D. Davis, TTCI, USA
- **5:00** Investigation into the root causes for rolling contact fatigue under heavy axleloads  
  H. Touray, TTCI, USA
- **5:20** Dynamic Track Modulus from Measurement of Track Acceleration by Portancemetre  
  M. Hosseingholian, M. Froumentin, CETE-NC, France
- **5:40** Development and Evaluation of High Performance Rail Steels for Heavy Haul Operations  
  J. LoPresti, D. Szablewski, S. Kalay, TTCI, USA
- **6:00** State of the art design aspects of ballasted rail tracks incorporating particle breakage, role of confining pressure and geosynthetic reinforcement  
  B. Indraratna, S. Nimbalkar, C. Rujikiatkamjorn, University of Wollongong, Australia  
  D. Christie, RailCorp, Australia

**C2: Improving capacity**

Chair: Gerhard TheLEN, Norfolk Southern Corporation - USA

- **4:40** Application Of Pressure Poured Cast Wheel Technology For European Freight Service  
  C. Lonsdale, M. Norton, Amsted Rail, USA  
  R. Bogacz, Krakow University of Technology, Poland  
  M. Sitarz, Silesian University of Technology, Poland  
  J. Snell, AEA Technology Rail, UK
- **4:55** ERRAC roadmap LD freight; for a modal shift with higher capacity  
  B. Olsson, M. Lundgren, Trafikverket, Denmark
- **5:10** Capacity at Railway Stations  
  A. Landex, Technical University of Denmark, Denmark
- **5:25** The problems of the presence of passenger and freight trains in the same track and their impact on the profitability of the railways companies  
  C. Pyrgidis, Aristotle University of Thessaloniki, Greece  
  E. Christogiannis, National Technical University of Athens, Greece
- **5:40** The Effective Freight Facility Improvement Method to Increase rail freight transportation of Korail  
  C. Kyeonghee, J. SangKi, Y. DongHee, KORAIL, Korea
- **5:55** Integrated freight car truck design concept  
  H. Touray, TTCI, USA
Challenge E: Bringing the territories closer together at higher speeds

E5: Stations

Chair: Etienne TRICAUD, AREP - France

- 4:40 Determining the opportunity of new railway stations
  G. David, N. Talbi, SNCF, France

- 5:00 A Study on the Foreign/Korean Railway Station Transfer System and Implications
  KM. Kim, SP. Choi, KORAIL, Korea

- 5:20 Indoor air quality at stations: Development of a methodology for quantifying railway customers' perception of odor at stations
  T. Kawasaki, T. Kyotani, T. Ushiogi, Y. Izumi, T. Hayakawa, RTRI, Japan

- 5:40 New Passenger Services in Railway Stations Based on Mode Group Diversity Multiplexing Optical Fiber Communications
  D. Loum, C. Tatkeu, M. Heddeaut, INRETS, France

- 6:00 A Passenger Flow Simulation to Evaluate the Degree of Discomfort upon Walking at a Station
  M. Yamamoto, M. Ishizuki, T. Aoki, RTRI, Japan
F3: Robustness & conflict resolution in route conception

Chair: Francis SOURD, SNCF - France

- 4:40 Conflict Index for Railways
  B. Schittenhelm, Technical University of Denmark, Denmark

- 5:00 Overcoming the Constraints caused by Nodes on the Rail Network
  J. Preston, University of Southampton, UK

- 5:20 Towards a Realistic Evaluation of Railway Infrastructure Capacity
  A. Merel, Laboratoire d’Informatique de Nantes-Atlantique, France

- 5:40 Automating Rolling Stock Diagramming And Platform Allocation
  M. Withall, C. Hinde, I. Phillips, T. Jackson, Loughborough University, UK
  R. Watson, S. Brown, RWA Rail Ltd, UK

- 6:00 Algorithmic Support for Disruption Management at Netherlands Railways
  D. Huisman, L. Kroon, Netherlands Railways (NS), The Netherlands
  S. Demassey, École des Mines de Nantes, France
  X. Gandibleux, Université de Nantes, France

F4: Rolling stock maintenance & condition monitoring

Chair: Franco CAVALIERE, Trenitalia - Italy

- 4:40 Predictive maintenance of railway subsystems using an Ontology based modelling approach
  P. Umiliacchi, CNC Centro Nuova Comunicazione srl, Italy
  F. Romano, AnsaldoBreda SpA, Italy
  D. Lane, SeeByte Ltd, UK

- 5:00 Practical and efficient PLC technology offering high capacity communication in the real trains and rail environment
  J.C. Ceron Arana, CERONTECH, France
  P. Attard, RATP, France

- 5:20 Evaluation of wireless sensor networks for embedded systems monitoring and event detections onboard trains
  O. Gatin, SNCF, France

- 5:40 A Test-Rig for the Condition-based Maintenance application on the Traction Chain of very high speed trains
  A. Di Donato, D. Marinis, S. Bruni, Bombardier Transportation S.p.A., Italy
  F. Unger-Weber, Bombardier Transportation GmbH, Germany
  F. Gherardi, AnsaldoBreda S.p.A., Italy
  P. Pennacchi, S. Chatterton, P. Borghesani, Politecnico di Milano, Italy

- 6:00 Development of an Operational Rolling Stock Assignment Model for Taiwan High Speed Rail System
  Y.C. Lai, WW. Zeng, SY. Lin, National Taiwan University, Taiwan
Tuesday, May 24th

8:30 am
9:30 am

Plenary Session 2
Economics and environment

Moderator: Monika Jones
Main issues: Masao Uchida, Organising Committee member of WCRR 2011 - Vice president of RTRI (Railway Technical Research Institute), Japan

Round Table:
- Josef Doppelbauer, Vice President Project Management & Chief Technical Officer, Bombardier Transportation
- Michel Dubromel, Board member (EU), Transport and Environment Association
- Prof Andrew McNaughton FEng, Chief Engineer, High Speed Two Limited, UK - Chair of the European Rail Research Advisory Council (ERRAC)
- Bryan Nye, CEO Australian Railway Association (ARA) - Australia Organising Committee member of WCRR 2011
- Masao Uchida, Vice president of RTRI, Japan - Organising Committee member of WCRR 2011

9:30 am
11:00 am

Oral sessions (details on pages 27-29)
Challenge A: A more and more energy efficient railway
Challenge B: An environmentally friendly railway
Challenge G: An even more competitive & cost efficient railway
**Challenge A: A more and more energy efficient railway**

### A1: Hybrid Systems

**Chair:** Uwe HENNING, Siemens - Germany

- **9:30** The evaluation of endurance running tests of fuel cells and battery hybrid test railway train  
  K. Ogawa, T. Yamamoto, H. Hasegawa, T. Furuya, S. Nagaishi, RTRI, Japan

- **9:50** Efficient Energy Management for On Board Battery-driven Light Rail Vehicle  
  W. Jeong, KRRI, Korea

- **10:10** Development of mild hybrid system for diesel railcar  
  M. Kobayashi, T. Yamashita, H. Yano, West Japan Railway Company, Japan

- **10:30** Electrical Equipments used by Diesel Hybrid Shunting Locomotive HD300  
  M. Lin, A. Ujiie, T. Soeda, T. Hasebe, M. Nagase, Toshiba, Japan

- **10:50** Evaluation of the hybrid locomotive « PLATHEE »  
  M. Thiounn-Guermeur, SNCF, France

### A2: Energy & whole system design

**Chair:** David KNIGHTS, RSSB - UK

- **9:30** ERRAC – European railway energy roadmap: towards 2030  
  C. Cheron, SNCF France  
  M. Walter, KNORR-BREMSE AG, Germany  
  J. Sandor, UNIFE, Belgium  
  E. Wiebe, UIC, France

- **9:50** Smart and efficient energy solutions for railway  
  J. Sandor, UNIFE, Belgium  
  B. Mads, Macroplan, Denmark  
  V. Recagno, D’Appolonia, Italy  
  E. Wiebe, UIC, France  
  R. Nolte, IZT, Germany

- **10:10** EcoTransIT World – the innovative web application for greening logistics & an innovative approach for global carbon foot-printing  
  H. Schwarz, EcoTransIT Consortium  

- **10:30** Implementing the European Strategic Rail Research Agenda – SRRA: The EU project ERRAC ROADMAP explained  
  D. Otteborn, Bombardier Transportation, Sweden  
  D. Schut, UIC, Belgium  
  G. Travaini, UNIFE, Belgium
Tuesday, May 24th

9:30 - 11:10 am

Challenge B: An environmentally friendly railway

B1: EMC & Electrical issues

Chair: Ignacio Jorge IGLESIAS, ADIF - Spain

- 9:30 Safety for human beings and pipelines: a smart approach in workshop design
  H. Smulders, MFP Janssen, Movares Nederland, The Netherlands
  P.J. Bos, Imtech Infra & Traffic, The Netherlands - AP Smol, Ret, The Netherlands

- 9:50 Integrated solutions for calculus of electromagnetic perturbation of railway track with real traffic conditions
  N. Haddad, SNCF, France - C. Catoire, ALTEN, France
  E. Sourdille, M. Cucchiaro, SNCF, France

- 10:10 Fast and Accurate Measurement of Radiated Emissions of Moving Trains According to IEC 62236
  G. Spadacini, S. Pignari, Politecnico di Milano, Italy
  E. Fedeli, Rete Ferroviaria Italiana Spa, Italy

- 10:30 Measurement of the static magnetic field generated by large inductors for railway applications
  G. Spadacini, S. Pignari, Politecnico di Milano, Italy
  E. Fedeli, Rete Ferroviaria Italiana Spa, Italy

- 10:50 Metamaterial for trainborne antenna integration and reduction of EMI between onboard systems in the railway environment
  D. Seetharamdoo, M. Berbineau, J. Avella Castiblanco, INRETS, France

B2: Noise & Vibration I

Chair: Franck Poisson, SNCF - France

- 9:30 Recent Developments in Noise Abatement at Rolling Stock and Track at Deutsche Bahn
  B. Asmussen, B. Schulte-Weming, K. Degen, Deutsche Bahn AG, Germany

- 9:50 Measuring, Modeling & mapping the effects of top of rail friction modifiers on rail corrugation and noise – A UK perspective
  SS. Hsu, M. Dembosky, M. Burstow Network Rail, UK

- 10:10 Development to decrease noise in place along railway-tracks of Sanyo Shinkansen
  M. Tsukanishi, M. Toyooka, T. Mori, H. Yano, West Japan Railway Company, Japan

- 10:30 Investigation of Wheel Squeal characteristics using a Rolling Contact Two Disk Test Rig
  P. Meehan, P. Bellette, X. Liu, The University of Queensland, Australia

- 10:50 A mechanical modeling strategy for squeal prediction on industrial railway brakes
  X. Lorang, A. Loyer, L. Leoni, SNCF, France - O. Chiello, INRETS/LTE, France
  JJ. Sinou, LTDS, France - S. Bouvet, N. Vincent, VIBRATEC, France
  G. Vermot Des Roches, E. Balmes, SDTOOLS, France

Decided as of May 11th, subject to change
Challenge G: An even more competitive & cost efficient railway

G1: Infrastructure design for maintenance

Chair: Emmanuel MANIER, SNCF - France

- **9:30** Dynamic characteristics of railway concrete sleepers using impact excitation techniques and model analysis
  A. Aikawa, F. Urakawa, RTRI, Japan
  K. Abe, Niigata University, Japan

- **9:50** Modeling of the Effect of the Embankment Dimensions on the Mechanical Behavior of Railway Track - Laboratory Scale Instrumented Test Embankments
  A. Kalliainen, P. Kolisoja, Tampere University of Technology, Finland

- **10:10** Impact of different drainage solutions on the deformational behavior of railway tracks due to atmospheric actions
  P. Teixeira, T. M. Ferreira, Instituto Superior Técnico (IST), Portugal

- **10:30** The EU-project INNOTRACK – a description of highlights and how they have been implemented
  B. Paulsson, UIC/Trafikverket
  A. Ekberg, Chalmers, Sweden
  J. Jaiswal, Corus, UK

- **10:50** The RUFEX Project
  N. Calon, A. Robinet, SNCF, France
  JF. Mosser, Soletanche Bachy, France

11:00 am
11:30 am
Poster session and coffee break

11:30 am
1:10 pm
**Oral sessions** (details on pages 30-32)

Challenge A: A more and more energy efficient railway

Challenge B: An environmentally friendly railway

Challenge G: An even more competitive & cost efficient railway
Tuesday, May 24th

11:30 am-1:10 pm

**Challenge A: A more and more energy efficient railway**

### A3: Rolling stock design

**Chair:** Pascal DESAUNAY, SNCF - France

- **11:30** The Design and Prototyping of a Lightweight, Crashworthy Rail Vehicle Driver's Cab
  J. Carruthers, C. O’Neill, S. Ingleton, NewRail, UK,
  J. Roberts, Bombardier Transportation
  G. Simmonds, AP&M
  M. Grasso, « Federico II » University, Naples, Italy

- **11:50** Determining the benefit of train mass reduction
  B. Eickhoff, R. Nowell, RSSB, UK

- **12:10** A novel mechatronic running gear: concept, simulation and scaled roller rig testing
  B. Kurzeck, L. Valente, DLR (German Aerospace Center), Germany

- **12:30** Aerodynamic Analysis of Intermodal Freight Trains Using Machine Vision
  JR. Edwards, A. Kumar, T. Rickett, JM. Hart, CL. Barkan, N. Ahuja, University of Illinois at Urbana-Champaign, USA

### A4: Energy efficiency

**Chair:** Henning SCHWARZ, UIC

- **11:30** On Saving Energy in Railway Management with an Evolutionary Multiobjective Algorithm: the Gonesse Example
  R. Chevrier, J. Rodriguez, G. Marlière, IFSTTAR, France

- **11:50** A Model and Approaches for Synchronized Energy Saving in Timetabling
  K. Kim, M. Han, SH. Hong, KRRI, Korea

- **12:10** Development and testing of a 200MJ / 350kw kinetic energy storage system for railways applications
  IJ. Iglesias, JC. Martinez, C. Tobajas, ADIF, Spain
  L. García-Tabares, M. Lafoz, C. Vazquez, CIEMAT (Research Centre for Energy, Environment and Technology) Spain
  J. Lucas, A. Etxeandia, Elytt Energy, Spain
  C. Zuazo, Tekniker, Spain
  JM. Carrasco, S. Vazquez, Greenpower, Spain

- **12:30** The Merseyrail Energy Monitoring Project
  P. Weston, E. Stewart, S. Hillmansen, C. Roberts, University of Birmingham, UK

- **12:50** The European Energy Measurement System on board of trains
  A. Gatti, G. Andrea, A. Ghelardini, Trenitalia s.p.a., Italy
**Challenge B: An environmentally friendly railway**

**B3: Noise & Vibration II**

**Chair:** Burkhard SCHULTE-WERNING, DB - Germany

- **11:30** Sound design studios for setting noise requirements on new rolling stock - a future scenario  
  S. Leth, F. Anders, Bombardier Transportation, Sweden

- **11:45** A hybrid prediction method for ground-borne vibrations due to railway traffic  

- **12:00** The Whispering-train program; the search to effective and cost-neutral noise reducing measures on existing freight wagons  
  J. Peen, E. De Jong, W. Van Roij, Lloyd's Register Rail, The Netherlands

- **12:15** From the limited to a full revision of the Noise TSI - presentation of a simplified method for the verification of conformity  
  F. Letoumeaux, P. Fodiman, SNCF, France  
  N. Meunier, Deutsche Bahn AG, Germany

- **12:30** Transportation noise annoyance, cognitive performance and sleep disturbances related to temporal structures and traffic modes  
  (Deufrako Project “RAPS”)  
  F. Margiocchi, SNCF, France  
  M. Beier, Deutsche Bahn AG, Germany

- **12:45** Reduction of Noise Generated from Lower Part of Shinkansen Cars with Sound-Absorbing Panels  
  Y. Kikuchi, T. Kurita, H. Yamada, East Japan Railway Company, Japan  
  A. Ido, RTRI, Japan

**B4: Materials for infrastructure**

**Chair:** Mark ROBINSON, Newcastle University - UK

- **11:30** Re used elastomers for track components  
  M. Santini, Nardi srl, Italy - C. Grazioli, G. Mastroianni, ISOLGOMMA srl, Italy  
  G. Serino, Università Federico II - Napoli, Italy

- **11:50** Revolutionising catenary design: the use of new materials  
  H. Smulders, JA. Minkman, JBM. Waes Van, Movares Nederland, The Netherlands  
  PAAF. Wouters, Eindhoven University of Technology, The Netherlands

- **12:10** Sustainable management of railway infrastructure - a case study in analyzing the fate of copper along railway tracks  
  U. Kral, PH. Brunner, Vienna University of Technology, Austria

- **12:30** Artificial Ballast Project: new materials for a new approach to railway infrastructure  
  P. Gonzalez Requejo, Fundacion caminos de Hierro, Spain

- **12:50** Crumb Rubber Modified Bitumen for sub-ballast layer  
  S. Alfaro Albalat, OCIDE construcción s.a., Spain  
  P. Gonzalez Paniagua, R. Muella Gutierrez, Administrador de infraestructuras ferroviarias, Spain  
  M. Ramos Carrera, Ente gestor de la red de transporte y de puertos de la generalitat, Spain  
  A. Villanueva Segarra, INECOTIFSA, Spain  
  JI. Real Herriaz, I. Villalba Sanchis, Universidad politécnica de valencia, Spain

Decided as of May 11th, subject to change
Tuesday, May 24th

11:30 am-1:10 pm

**Challenge G: An even more competitive & cost efficient railway**

**G2: Maintenance strategy**

*Chair:* Bjorn PAULSSON, UIC

- **11:30**  
  **Efficiency and Improvement of the Business by Utilizing Track Maintenance System (TRAMS)**  
  *K. Horigome,* East Japan Railway Company, Japan

- **11:50**  
  **VirMaLab – A generic approach for optimizing maintenance policies of complex systems**  
  *P. Aknin, L Bouillaut,* INRETS, France  
  *R. Donat,* EDF - R&D, France

- **12:10**  
  **Computer vision for wheelsets maintenance automation**  
  *PL. Wacrenier, A. Semerano, P. Antuerofermo, B. Baudru, G. Nurit, T. Frances,*  
  MER MEC Group, France,  
  *S. Carre,* MER MEC Group, Italy

- **12:30**  
  **Heuristic based track maintenance scheduling optimisation**  
  *E. Schieder, LM. Quiroga,* TU Braunschweig, Germany

- **12:50**  
  **Risk based method for determining inspections and inspection frequencies**  
  *J. Van Der Werf,* Lloyd’s Register Rail Europe B.V., The Netherlands

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1:10 pm  
2:10 pm

**Lunch break** offered by **BOMBARDIER**

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2:10 pm  
3:50 pm

**Oral sessions** (details on pages 33-35)

Challenge A: A more and more energy efficient railway

Challenge B: An environmentally friendly railway

Challenge G: An even more competitive & cost efficient railway
Challenge A: A more and more energy efficient railway

A5: Electrification

Chair: Christian COURTOIS, SNCF - France

- 2:10 Active Substation
  Y. Warin, R. Lanselle, M. Thiounn-Guermeur, SNCF, France

- 2:30 Efficient recovery of braking energy by reversible dc substation
  D. Cornic, ALSTOM, France

- 2:50 Substation with zero auxiliary consumption
  G. Vrignaud, SNCF, France

- 3:10 Application of a kinetic energy recovery system
  A. Romo, H. Ibaiondo, Ingeteam Traction, S.A., Spain
  JM. Ortega, Metro Bilbao, Spain

- 3:30 “IFZONE” project: improving circulation in neutral sections
  T. Nieva, Trainelec, Spain
  JC. Martinez Acevedo, C. Tobajas, LF. Almenara, I.J. Iglesias, J. Cabello, ADIF, Spain
  M. Aiarzaguena, Trainelec, Spain

A6: Eco driving

Chair: Norio TOMII, Chiba Institute of Technology, Faculty of Information and Computer Science - Japan

- 2:10 Driver advisory information for energy management and regulation
  J. Jin, R. Kadhim, A. Broadbent, RSSB, UK

- 2:30 Energy efficiency on train control: design of metro ATO driving and impact of energy accumulation devices
  M. Dominguez, AP. Cucala, A. Fernandez, Universidad Pontificia Comillas, Spain

- 2:50 Eco-driving: understanding the approaches, benefits and risks
  J. Moore, A. Scott, R. Minson, L. Moisio, J. Moll, M. Clements, RSSB, UK

- 3:10 Optimal strategy driving for traction energy saving
  C. Desprez, SNCF, France

Decided as of May 11th, subject to change
B5: Aerodynamics

Chair: Pierre-Etienne GAUTIER, SNCF - France

2:10 Assessment of Micro-Pressure Wave Emissions from German High-Speed Railway Tunnels
M. Hieke, C. Gerbig, T. Tielkes, KG. Degen, Deutsche Bahn AG, Germany

2:30 Development of pantograph for the Series N700 Shinkansen
Y. Nakakura, K. Sakanoue, Y. Minami, Y. Okada, Central Japan Railway Company, Japan

2:50 The calculation of train slipstreams using Large Eddy Simulation techniques
C. Baker, H. Hemida, University of Birmingham, UK

3:10 Large Eddy Simulation for Train Aerodynamic Noise Predictions
A. Giusti, C. Bianchini, B. Facchini, A. Andreini, F. Grazzini, D. Bellini, University of Florence, Italy
F. Chiti, Ansaldo Breda, Italy

B6: Fuel cell & battery technology

Chair: Gianfranco CAU, UIC

2:10 Applying hybrid type energy storage system in AC railway
Y.J. Jeon, L. Yoo Kyung, KORAIL, Korea

2:30 Drive control of the traction inverter installed on the fuel cells and lithium-ion hybrid test train
F. Takemasa, O. Kenichi, Y. Takamitsu, N. Shintaro, H. Hitoshi, RTRI, Japan

2:50 Development of a Catenary and Battery-powered Hybrid Railcar System
I. Masatsuki, K. Yoshida, East Japan Railway Company, Japan

3:10 Hydrogen Fuel-Cell Locomotive: Switching and Power-to-Grid Demonstrations
AR. Miller, Vehicle Projects Inc, USA
M. Johnson, U.S. Army Corps of Engineers, USA
K. Hess, T. Erickson, J. Dippo, Vehicle Projects Inc, USA
T. Lambrecht, BNSF Railway Company, USA

3:30 Development of a Train Simulator for Diesel-Hybrid Railcars and Locomotives
T. Ogawa, H. Nakamura, M. Kondo, K. Kumazawa, RTRI, Japan
O. Yamashita, New Media Research Institute, Japan
Challenge G: An even more competitive & cost efficient railway

G3: Economic efficiency

Chair: Pierre MESSULAM, SNCF - France

- 2:10 The Performance of Yield Management
  A. Remy, SNCF, France

- 2:30 Market Impact Evaluation – The way to judge the success of completed rail research
  M. Robinson, Newcastle University, UK
  L. Velardi, M. Vaglio, Trenitalia S.p.A., Italy

- 2:50 Tomorrow’s Railway and Climate Change Adaptation (TRaCCA)
  J. Lane, RSSB, UK,
  J. Dora, Network Rail, UK

- 3:10 Minimizing rail lifecycle costs using Track-Ex damage and cost estimates
  M. Dembosky, A. Doherty, S. Greenwood, Network Rail, UK

- 3:30 Traction Power System Capacity Limitations at Various Traffic Levels
  L. Abrahamsson, L. Söder, KTH (Royal institute of Technology), Sweden

Poster session and coffee break

Oral sessions (details on pages 36-39)

Challenge G: An even more competitive & cost efficient railway
Challenge G: An even more competitive & cost efficient railway

G4: Rolling Contact Fatigue

Chair: Harry TOURNAY, TTCI - USA

• 4:10 Improving track geometry alignment to reduce rolling contact fatigue (RCF)  
  M. Burstow, Network Rail, UK

• 4:30 Developing effective, evidence based control measures for rail rolling contact fatigue  
  K. Timmis, RSSB, UK  
  M. Burstow, Network Rail, UK

• 4:50 Development of high speed rail-wheel contact simulator  
  J. Choi, IY. Choi, JO. Lee, TW. Kim, DH. Lee, JW. Seo, KRRI, Korea

• 5:10 A new methodology for the estimation of the density of contact fatigue defects in rails  
  TML. Nguyen-Tajan, C. Funfschilling, P. Pouligny, V. Versailles, SNCF, France

• 5:30 The impact of rail grade selection and friction modifier application on rail degradation  
  R. Stock, Voestalpine Schienen GmbH, Austria  
  R. Pippan, University of Leoben, Austria  
  DT. Eadie, D. Elvidge, K. Oldknow, Kelsan Technologies Corp., Canada

G5: Infrastructure maintenance operation

Chair: John AMOORE, Network Rail - UK

• 4:10 Short and long term behaviour of high speed lines as determined in 1:1 scale laboratory tests  
  V. Cuellar, F. Navarro, MA. Andreu, JL. Cámara, F. Gonzalez, CEDEX, Spain  
  M. Rodriguez-Plaza, A. Nuñez, P. Gonzalez Paniagua, J. Navarro, R. Rodriguez, ADIF, Spain

• 4:30 Improving track stability and track maintenance operations through enhanced air and rail temperature  
  E. Laurans, P. Pouligny, SNCF, France  
  L. Girardi, JL2a, France,  
  J. Colibri, Mnémodyne, France

• 4:50 Improving ballast tamping process  
  C. Paderno, Oxand sàrl, Switzerland

• 5:10 On the damaging effects of the ballast tamping operation  
  R. Perales, G. Saussine, SNCF, France,  
  N. Milesi, RFF, France  
  Y. Descantes, LCPC, France

• 5:30 New degradation laws of the ballasted track – Economic correlation between maintenance and renewal  
  M. Antoni, J. Giraudieu, SNCF, France
G6: Workforce of today & tomorrow

Chair: Manuel PERREIRA, IST - Portugal

- 4:10 The development of a domain ontology for the rail industry
  C. Roberts, J. Easton, R. Davies, University of Birmingham, UK

- 4:30 Distraction versus Communication: The Mobile Phone Challenge in the GB Rail Industry
  T. Luke, J. Heavisides, RSSB, UK
  J. Pitsopoulos, C. Pitsopoulos, Human Factors Risk Management (HFRM), UK,
  M. Regan, INRETS, France

- 4:50 Usability testing of the future standardized European Driver’s Desk under real world conditions
  D. Miglianico, Alstom, France
  X. Zubillaga, M. Barta, Vienna University of Technology, Austria
  C. Karsten, M. Rentzsch, Institut für Arbeits- und Sozialhygiene Stiftung, Germany
  F. Delooz, International Union of Railways, France

- 5:10 Universities in Europe and the United States Collaborate to Develop Future Railway Engineers
  P. Lautala, Michigan Tech University, USA
  R. Macario, V. Reis, Universidade Tecnica de Lisboa, Portugal
  J.R. Edwards, University of Illinois at Urbana-Champaign, USA
  M. Marinov, Newcastle University, UK
  J. Pachl, Technische Universitat Braunschweig, Germany

- 5:30 The future of driver training: defining training needs and integrating non-technical skills
  K. Bonsall, A. Taylor, RSSB, UK
Challenge G: An even more competitive & cost efficient railway

G7: Infrastructure condition monitoring

Chair: Andy DOHERTY, Network Rail - UK

- **4:10** Symbolic data analysis and supervised/non supervised learning algorithms for bridge health monitoring
  C. Cremona, MEEDDM, France
  A. Cury, A. Orcesi, LCPC, France
  L. Dieleman, SNCF, France

- **4:30** Development of Advanced OCS Inspection System Using Image Processing Technology
  S. Tabayashi, W. Yusuke, Meidensha Corporation, Japan
  I. Mitsuru, K. Tatsuya, RTRI, Japan

- **4:50** Study of condition monitoring for track irregularity and track materials using commercial test car
  H. Matsuda, M. Takikawa, E. Yazawa, East Japan Railway Company, Japan
  T. Nanmoku, RTRI, Japan

- **5:10** Preventive maintenance of railway infrastructures using GPR-ground penetrating radar
  R. Mínguez Maturana, S. Sandoval Castaño, Geofisica Aplicada Consultores, S.L., Spain
  B. Duclos Bautista, UCM-Complutense University of Madrid, Spain
  Á. Andrés Alguacil, M. Rodriguez Plaza, ADIF, Spain

- **5:30** Detection method for rail corrugation adopting on board monitoring
  H. Tanaka, Y. Saruki, A. Shimizu, A. Haga, T. Nanmoku, RTRI, Japan
  M. Fukuyama, Kyushu railway company, Japan
G8: Test and homologation

Chair: Dan OTTEBORN, UNIFE - Sweden

- 4:10 Effect of parameter uncertainty on the numerical estimate of a railway vehicle critical speed
  L. Mazzola, S. Bruni, Politecnico di Milano, Italy
  C. Funfschilling, JJ. Thomas, SNCF, France

- 4:30 Testing the dynamic behaviour of vehicles: Normalisation of test conditions by use of multi linear regressions
  P. Dupont, SNCF, France

- 4:50 Complementary Tests: the key of the successful ERTMS deployment in Spain
  IJ. Iglesias, ADIF, Spain
  E. Santiago, Ministry of Fomento, Spain
  A. Dominguez Chala, A. Arranz, MT. Cambronero, C. De la Roza, B. Domingo, ADIF, Spain
  C. Arias, Renfe Operadora, Spain
  MA. Bueno, S. Dominguez, Rail Technology and Research (TIFSA), Spain
  D. Molina, CEDEX (Studies and Research Centre of Ministry of Fomento), Spain

- 5:10 Correlation between track geometry quality and vehicle reactions in the virtual rolling stock homologation process
  KU. Wolter, B. Slovak, M. Zacher, Deutsche Bahn AG, Germany

- 5:30 Hardware-in-the-Loop testing of pantograph for homologation
  S. Bruni, A. Facchinetti, Politecnico di Milano, Italy
  M. Kolbe, Deutsche Bahn AG, Germany
  JP. Massat, SNCF, France
Plenary Session 3
Meeting the challenges for future transportation needs

Moderator: Monika Jones
Main issues: Semih Kalay, Organising Committee member of WCRR 2011 - Vice President, Technology, TTCI (Transportation Technology Center Inc), USA

Round Table:
- Roy Allen, President, TTCI, USA
- Semih Kalay, Vice President, Technology, TTCI, USA - Organising Committee member of WCRR 2011
- Joachim Mayer, Head of Rolling Stock, Technology & Procurement, Deutsche Bahn AG, Germany
- Len Porter, Chief executive, RSSB, UK
- Hisashi Tarumi, President of RTRI, Japan
- Marcel Verslype, Executive Director, ERA

Oral sessions (details on pages 41-43)
Challenge C: Increasing freight capacity and services
Challenge H: For an even safer and more secure railway
10:00 -11:00 am

**Challenge C: Increasing freight capacity and services**

**C3: Improved operation & maintenance for safe and increased freight services**

Chair: Simon FLETCHER, UIC

- **10:00** Longitudinal forces evaluation of SNCF trains  
  T. Duran, SNCF, France  
  L. Cantone, University of Rome “TOR VERGATA,” Italy

- **10:20** Reducing Network Costs Through Improved Vehicle Maintenance  
  A Lean Production Approach  
  C. Barkan, B. Schlake, JR. Edwards, University of Illinois at Urbana/Champaign, USA

- **10:40** CARACO: a solution for crew planning problems, the French freight experience  
  H. Djellab, SNCF, France  
  J. Bionnier, SNCF GEODIS, France

**C4: High performing wheels & rails for freight**

Chair: Stefano GUIDI, Trenitalia - Italy

- **10:00** A fem model to compare measurement layouts to evaluate the wheel-rail contact forces  
  L. Pugi, S. Falomi, S. Papini, A. Rindi, Università di Firenze, Italy

- **10:20** Track Buckling Hazard Detection and Rail Stress Management  
  A. Kish, Kandrew Inc. Consulting Services, USA  
  R. McWilliams, H. Harrison, Salient Systems, USA

- **10:40** Development and Testing of High Performance Wheel Steels  
  S. Cummings, S. Kalay, TTCI, USA
H1: Rolling stock monitoring

Chair: Joachim MAYER, DB - Germany

- 10:00 The Safety Impact of Vehicle Health Monitoring in North America
  S. Kalay, TTCI, USA
  P. French, Association of American Railroads, USA
  W. Robert, Cambridge Systematics, USA
  H. Tournay, TTCI, USA

- 10:20 Improvement of Running Safety of Railway Vehicles against an Earthquake
  K. Iida, M. Takefumi, S. Mitsugi, N. Yukio, N. Daichi, RTRI, Japan
  K. Yasushi, East Japan Railway Company, Japan

- 10:40 Vibroacoustical measurements for bearing fault detection
  S. Bellaj, A. Pouzet, C. Mellet, R. Vionnet, D. Chavance, SNCF, France

H2: Safety general issues

Chair: Kevin TAYLOR, RISSB - Australia

- 10:00 Safety: progress through in-the-field experience
  C. Neveu, S. Duvenci-Langa, SNCF, France

- 10:15 Audio-Video Surveillance System for Public Transportation
  F. Ganansia, V. Delcourt, SNCF, France
  QC. Pham, A. Lapeyronnie, C. Baudry, L. Lucat, P. Sayd, CEA, France
  S. Ambellouis, D. Sodoyer, INRETS, France
  AC. Barcelo, F. Heer, MARTEC, France

- 10:30 Industrial formal method to secure software dependability – railways applications
  M. Antoni, N. Ammad, SNCF, France
  E. Schnieder, Technische Universität Braunschweig, Germany

- 10:45 Transmission of airborne infection by bioaerosols expelled from passengers activity during the journey
  W. Jeong, SB. Kwon, Y. Cho, DS. Park, J. Park, KRRI, Korea
  C. Kim, Yonsei University, Korea
  GN Bae, Korea Institute of Science and Technology, Korea
H3: Signalling

Chair: Christian SEVESTRE, SNCF - France

- 10:00 Reliability of the GSM-R Communication System against Railway Electromagnetic Interferences
  S. Dudoyer, N. Ben Slimen, V. Deniau, M. Berbineau, IFSTTAR, France

- 10:20 The GSM-R vulnerabilities and a prototype detect system
  R. Malangone, F. Senesi, RFI, Italy
  E. Bagagli, G. Rubino, Intecs, Italy
  M. Luise, Pisa University, Italy
  V. Pellegrini, Wiser, Italy

- 10:40 A 3D Simulation Model of Train Dynamics for Testing Odometry Algorithms
  L. Pugi, A. Ridolfi, G. Vettori, B. Allotta, Università di Firenze, Italy
  M. Malvezzi, University of Siena, Italy
  F. Cuppini, A. Paganone, F. Salotti, ECM S.p.A, Italy

11:00 am
11:30 am

Poster session and coffee break
offered by SNCF

11:30 am
1:10 pm

Oral sessions (details on pages 44-46)

Challenge H: For an even safer and more secure railway
H4: Structures

**Chair:** Patrice SCHMITT, SNCF - France

- **11:30** Condition Monitoring System for Railway Structures in Hammersmith
  A. Hada, RTRI, Japan  
  K. Soga, C. Middleton, P. Fidler, P. Bennett, Cambridge University, UK  
  N. Hoult, Queens University, Canada  
  K. Leung, A. Bachin, Imperial College London, UK

- **11:50** A non-destructive inspection method for concrete elements in tunnel linings using remote laser sensing
  N. Misaki, K. Kenichi, S. Yasuhiko, West Japan Railway Company, Japan  
  S. Yoshinori, K. Oleg, Institute for Laser Technology, Japan  
  S. Masahiro, O. Hirokazu, RTRI, Japan

- **12:10** Practical use of Earthquake Early Warning (EEW) System for Shinkansen
  S. Sato, K. Ashiya, S. Yamamoto, N. Iwata, M. Korenaga, S. Noda, RTRI, Japan

- **12:30** Fire Detection in Metro and Railway Tunnels
  JR. Almeida Junior, University of Sao Paulo, Brazil  
  F. Mori, CIA do Metropolitano de Sao Paulo, Brazil  
  WCT. Pinto, University of Sao Paulo, Brazil

- **12:50** Characteristics of the Vibration Generated by Different Excitation Methods During Thermosonic Non-destructive Testing
  B. Kang, Y. Cho, N. Baeg, KRRI, Korea

H5: ERTMS/ETCS

**Chair:** Alfred HECHENBERGER, DB - Germany

- **11:30** ERTMS Successful Deployment in Spain
  IJ. Iglesias, MT. Cambroner, C. De la Roza, B. Domingo, J. Gómez Gil, A. Arranz, ADIF, Spain  
  C. Arias, I. Ribera, JA. Jimenez, Renfe Operadora, Spain  
  J. Tamari, J. Bueno, CEDEX, Spain

- **11:50** Research and analysis of the most relevant causes of degradation of ERTMS based high speed signalling system
  F. Nazzareno, E. Marzilli, F. Senesi, M. Ciaffi, G. Alterisio, G. Illibato, Rete Ferroviaria Italiana, Italy

- **12:10** Mechanizing the Validation of ERTMS Requirements and New Procedures
  A. Herranz, G. Marpons, C. Benac-Earle, J. Mariño, Universidad Politécnica de Madrid, Spain

- **12:30** ERTMS Formal Specs: a domain specific language to formalize ERTMS specifications for onboard unit development
  L. Ferier, S. Pinte, ERTMS Solutions, Belgium

- **12:50** Computation of the safe emergency braking decelerations for trains operated by ETCS/ERTMS using the Monte Carlo statistical approach
  P. Meyer, F. Bourgeteau, R. Chavagnat, G. Gilon, SNCF, France
H6: Risk/Safety management

Chair: Roy ALLEN, TTCI - USA

- **11:30** Risk-based Decision Support in relation to Potential Safety Deficiencies
  
  J. Braband, Siemens AG, Germany

- **11:50** Fatal train accidents on Europe’s railways: 1980-2009
  
  A. Evans, Imperial College London, UK

- **12:10** Safety Culture, Safety Behavior and Safety Performance in Railway Companies: Evidence from Taiwan Railway System
  
  YH. Cheng, National Cheng Kung University, Taiwan

- **12:30** The NAOS approach: a new way for conceiving more applicable safety regulations
  
  C. Blatter, A. Largier, C. Neveu, SNCF, France
  
  J. Paries, Dedale SA, France

- **12:50** European harmonised approach for risk assessment in railway sector
  
  N. Duquenne, T. Breyne, D. Jovicic, C. Cassir, M. Antova, K. Davies, ERA

H7: Track Inspection

Chair: Antonella SEMERANO, MerMec - Italy

- **11:30** General Track Inspection using Commercial Railway Vehicle for Kyushu Shinkansen
  
  M. Tsutaka, H. Moritaka, T. Matsumoto, Kyushu Railway Company, Japan
  
  E. Yazawa, RTRI, Japan

- **11:50** Development of the rail fastening monitoring system
  
  Y. Shimono, Y. Yamaguchi, M. Kusuda, West Japan Railway Company, Japan

- **12:10** Detection of Obstacle on Railway Track by Fusing Super-Resolution Radar and Image Sensor
  
  M. Ukai, N. Nagamine, BT. Nassu, RTRI, Japan
  
  T. Inaba, University of Electro-Communications, Japan

- **12:30** Transverse Strength of Railway Tracks
  
  M. Testa, RFI, Italy
  
  A De Iorio, M. Grasso, F. Penta, GP. Pucillo, University Federico II, Italy
  
  S. Rossi, RFI, Italy
  
  G. Farneti, Itacertifer, Italy

- **12:50** Debris flow warning system for railway infrastructure
  
  C. Rachoy, K. Ratzinger, Austrian Federal Railways, Austria
Wednesday, May 25th

11:30 am -1:10 pm

**Challenge H: For an even safer and more secure railway**

**H8: Track condition monitoring**

*Chair: Buddhima INDRARATNA, University of Wollongong - Australia*

- **11:30** GPR assessment of ballast conditions on field model track sections  
  *B. Indraratna, L. Su, R. Cholachat, University of Wollongong, Australia*

- **11:50** Structural behaviour and failure mechanisms of monoblock concrete railway sleepers  
  *O. Kerokoski, A. Numnikolu, T. Rantala, Tampere University of Technology, Finland  
  T. Viitala, VP. Lilja, Finnish Transport Agency, Finland*

- **12:10** Theoretical study on a measuring method of rail axial stress via vibration modes of periodic track  
  *K. Abe, S. Shimizu, K. Koro, Niigata University, Japan - A. Aikawa, RTRI, Japan*

- **12:30** Tools for evaluating and predicting track geometrical quality evolution over time  
  *C. Vale, R. Calçada, Faculty of Engineering of University of Porto, Portugal*

- **12:50** Increased winter ability will sustain the railway capacity  
  *U. Juntti, R. Kumar, Lulea University of Technology, Sweden  
  A. Linné, Performance in Cold AB, Sweden*

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1:10 pm

**Lunch Break** *offered by BOMBARDIER*

2:30 pm

**Oral sessions** *details on pages 46-47*

3:30 pm

**Challenge H: For an even safer and more secure railway**

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2:30 -3:30 pm

**Challenge H: For an even safer and more secure railway**

**H9: Wheel Rail**

*Chair: Francesco LOMBARDO, UNIFE*

- **2:30** Study on the development of the detection system of signs before the wheelclimb derailment at low speed  
  *Y. Suda, H. Chiehjen, A. Masahiko, T. Takashi, The University of Tokyo, Japan  
  Y. Takayoshi, H. Junichi, West Japan Railway Company, Japan  
  K. Takashi, K. Tetsuya, Akebono Brake Industry Co. Ltd., Japan*

- **2:50** The influence of the wheel/rail contact point condition on friction coefficient  
  *A. Kataori, K. Doi, H. Iijima, S. Momosaki, East Japan Railway Company, Japan  
  S. Matsumoto, East Japan Transport Technology Co.Ltd, Japan*

- **3:10** Successful examples of co-operation in wheel rail interface management in the Netherlands  
  *A. Zoeteman, R. Dollevoet, ProRail / Delft University of Technology, The Netherlands*
2:30 - 3:30 pm

Challenge H: For an even safer and more secure railway

**H10: Cross wind issues**

**Chair:** Giampaolo MANCINI, Trenitalia - Italy

- **2:30** Steady and moving high-speed train crosswind simulations. Comparison with wind-tunnel tests  
  *P. Schito, F. Cheli, D. Rocchi, G. Tomasini, C. Catanzaro,* Politecnico di Milano, Italy

- **2:50** Surface pressure measurements on train for an on board cross-wind speed detection device  
  *L. Mariano, G. Tomasini, F. Cheli, D. Rocchi,* Politecnico di Milano, Italy

- **3:10** Development of a method to extract trackside sites that are subject to strong winds  
  *T. Fukuhara, K. Araki, T. Imai,* RTRI, Japan

**H11: Rolling Stock general issues**

**Chair:** Francesco DEMARIA, UNIFE - Italy

- **2:30** Identification of criteria of thermal cracking on wheel treads aiming at optimized brake system design  
  *K. Handa, H. Kakishima,* RTRI, Japan

- **2:50** Fire scenarios modelling for the safe design of a passenger vehicle  
  *A. Giusti,* University of the Study Florence, Italy  
  *D. Troiano,* Italcertifer S.C.p.A., Italy  
  *L. Caruso, A. Andreini,* Trenitalia S.p.A, Italy  
  *R. DaSoghe,* University of the Study Florence, Italy

- **3:10** Reasonable application of an EN 50126 for the modification of an electrical and mechanical modification of a Safety System  
  *S. Poeting,* Alstom Transport Germany Gmb, Germany
Prizes & Closing Session

Moderator: Monika Jones

Rudolf Strohmeier, Deputy Director-General: Scientific advances - DG Research and Innovation, European commission

Prizegiving

Challenge A: A more and more energy efficient railway, 
Marie-Pierre Meynard, Chair, Organising Committee member of WCRR 2011

Challenge B: An environmentally friendly railway, 
Alfred Hechenberger, Executive Committee member of WCRR 2011

Challenge C: Increasing freight capacity and services, 
Stefano Guidi, Executive Organising Committee member of WCRR 2011

Challenge D: A world of services for passengers, 
Marie-Pierre Meynard, Chair, Organising Committee member of WCRR 2011

Challenge E: Bringing the territories closer together at higher speeds, 
Dan Otteborn, Organising Committee member of WCRR 2011

Challenge F: Even more trains even more on time, 
Masao Uchida, Organising Committee member of WCRR 2011

Challenge G: An even more competitive and cost efficient railway, 
Anson Jack, Organising Committee member of WCRR 2011

Challenge H: For an even safer and more secure railway, 
Semih Kalay, Organising Committee member of WCRR 2011

Best Young Researcher: Adeline Schlumberger, Chair, Executive Committee member of WCRR 2011

Best Poster: Adeline Schlumberger, Chair, Executive Committee member of WCRR 2011

Invitation to the next WCRR Congress in 2013

David George, Organising Committee member of WCRR 2011 - Chief Executive Officer, CRC for Rail Innovation, Australia
**Challenge A: A more and more energy efficient railway**

**A1P:** A Study on Test of Energy Storage System for DC Railway  
G. Kim, H. Lee, KRRI - Korea

**A2P:** A Study on the Increasing Levitation Force in the Magnetic Levitation System  
Minkyu. Kim, Seoul Metro, Korea - Minseok Kim, Graduate School of Railroad, Korea  
J. Ko, Korea Rail Network Authority, Korea Y. Ko, Seoul Metro, Korea  
J. Lee, Graduate School of Railroad, Korea

**A3P:** Study on the energy saving running technology and its CO₂ reduction effect of railway vehicle  
CK. Lee, K. Dong Hee, KRRI, Korea

**A4P:** Development of Environmentally Friendly Treatment System for End-of-Life Railway Vehicle  
CK. Lee, YK. Kim, P. Pruittichaiwiboon, KRRI, Korea - KM. Lee, Ajou University, Korea

**A5P:** Back – up power systems based on fuel cell technology for signalling equipment electrical supply  
M. Leone, M. Stellin, D. Schiavoni, RFI, Italy

**A6P:** Analysis of energy-saving strategies in railway power supply systems  
A.J. Lopez, RR. Pecharroman, E. Pilo, Universidad Pontificia Comillas, Spain

**A7P:** Improving Energy Efficiency in DC networks requires special care in compatibility studies  
E. Meerman, M. De Rooij, Lloyd's Register Rail Europe, The Netherlands

**A8P:** The evaluation of lithium ion battery’s deterioration of FC hybrid railway vehicle  
S. Nagaishi, K. Ogawa, T. Yamamoto, T. Furuya, H. Hasegawa, RTRI, Japan

**A9P:** Modeling of the railway traction system for calculating the efficiency in order to optimize the economical timing of trains  
J. Pouget, C. Desprez, SNCF, France

**A10P:** Modelling and Design of Control Structure for Railway Hybrid Systems using Energetic Macroscopic Representation  
J. Pouget, J. Baert, SNCF, France - D. Hissel, MC. Pera, Université de Franche Comte, France

**A11P:** Energy efficiency and environmental criteria in the awarding of railway vehicles and services: methodologies of implementation and monitoring  
S. Ricci, A. Baldassarra, E. Cosciotti, Sapienza Università di Roma, Italy

**A12P:** Dimensioning strategy of a kinetic energy recovery system for railways  
A. Romo, H. Ibiaondo, Ingeteam Traction, S.A., Spain - M. Carmona, E. Segovia, ADIF, Spain

**A13P:** A Study of the Train Performance Simulation for Korea Next Generation High-speed Train  
T. Lee, KRRI, Korea - C. Park, S. Choi, K. Kim, High-speed Rail Division, Ukwang-City - Republic of KOREA

**A14P:** Development of Diesel hybrid vehicle braking systems  
A. Tanimoto, Y. Takayoshi, K. Makoto, West Japan Railway Company, Japan
Challenge B: An environmentally friendly railway

B1P: Methodology for the analysis of rolling contact fatigue of railways wheels and comparison of different steel grades
   F. Demilly, GHH-Valdunes, France - P. Dufreney, JF. Brunel, Polytech’Lille – LML, France
   P. Charkaluk, Ecole Centrale Lille, France

B2P: Durability and longitudinal expandability of friction moderator applied on rail
   S. Fukagai, T. Ban, H. Chen, A. Amura, M. Ishida, RTRI, Japan - K. Ohno, TESS Co., Ltd, Japan

B3P: Modern track design options and their noise and vibration performance
   D. Herron, A. Wang, J. Porrill, S. Cox, D. Rhodes, Pandrol Ltd, UK

B4P: Evaluation of static and dynamic performance of floating slab track by real-scale laboratory mock-up tests
   SY. Jang, SH. Hwang, HH. Cho, SC. Yang, KRRI, Korea

B5P: On the curved track dynamics with rail web damper for noise reduction
   J. Kim, W. Lee, KRRI, Korea

B6P: Development of Eco-friendly PC Sleeper using Slag
   T. Koh, KRRI, Korea

B7P: Audibility of Access Doors Buzzers
   T. Loizeau, E. Forquin, B. Berger, SNCF, France

B8P: Regulation by the rate of CO2 in HVAC system to reduce heating energy consumption
   L. Planchette, J.F. Balacey, SNCF, France

B9P: Study on Development and Reliability Analysis of the Train Location Device based on GNSS
   KH. Shin, D. Shin, JH. Lee, KRRI, Korea

Challenge C: Increasing freight capacity and services

C1P: Supporting freight operators decision on investing in technology for rolling stock
   F. De Maria, Faiveley Transport, Italy - A. Palazzolo, Trenitalia, Italy
   L. Cantone, D. Negretti, University of Rome Tor Vergata, Italy - F. De Maria, Faiveley Transport, Italy

C2P: TICLOG project: developing RFID and intra-train radio applications for the control and optimization of the logistic chain
   E. Fernández Pinel, S. Rodríguez, J. Valdés, Instituto de Magnetismo Aplicado (UCM-ADIF-CSIC), Spain - JM. González, Unidad Asociada ICMM-CSIC / IMA-UCM, Spain
   V. Antón, C. Montón, MJ. García-Prieto, J. Pereira, IINECO-TIFSA, Spain
   JM. Mansilla, Renfe Operadora, Spain - R. Martinez, A. Aguilar, ADIF, Spain

C3P: A new integrated management method for the Technology & Operation harmonisation process in the ERTMS interoperable network realisation
   U. Foschi, C. Iommazzo, L. Calò, Rete Ferroviaria Italiana (RFI), Italy

C4P: A Robust Decision Support Framework for Long-Term Railway Capacity Planning
   YC. Lai, MC. Shih, National Taiwan University, Taiwan

C5P: Analysis on the fundamental elements of intermodal transport for promoting the railway freight
   G. Li, RTRI, Japan
C6P: Development of Optimum Assessment Technique for Railway Infrastructure Clearances
F. Masoud, MN. Fereidoon, Amirkabir, University of Technology, Iran

C7P: Promoting an improvement of the port-rail intermodality in Spain
M. Novales, MR. Bugarín, E. Conles, A. Orro, University of A Coruña, Spain
S. Furió, Fundación Valenciaport, Spain

C8P: Sizing and tomography of rolling contact fatigue cracks in rails using NDT technology – potential for high speed application
C. Roberts, C. Davis, A. Kostryzhev, G. Nicholson, M. Papaelias, X.J. Hao, University of Birmingham, UK

C9P: Introducing new rolling stock in existing railway systems, the best of both worlds?
H. Smulders, Movares Nederland, The Netherlands - PG. Goncalves, RP. Santo, REFER, Portugal
HJ. Dijk Van, Movares Nederland, The Netherlands

Challenge D: A world of services for passengers

D1P: Economic management of punctuality
M. Chandesris, L. Lefrancq, SNCF, France

D2P: A Study on Efficient Transfer System in Express Railway Station - focusing on Yong-San Station
SP. Choi, K.-M. Kim, KORAIL, Korea

D3P: Innovative high data rate on board/ground communication
F. Desclaux, Actia Sodielec, France

D4P: Analysis of Rail Passenger Travel Patterns Using Transit Smart Card Data
J. Eom, J. Lee, M. Sung, KRRI, Korea

D5P: New standard for multimedia applications on board trains enables improved interoperability
G. Fadin, FAR Systems SpA, Italy - P. Umiliacchi, CNC Centro Nuova Comunicazione Srl, Italy
A. Gatti, Trenitalia, Italy

D6P: Studies of technologies that can be used to improve the service delivered to travellers (comfort, satisfaction)
P. Galtier, SNCF, France

D7P: The new Trenitalia fault tolerant high speed Ethernet Train Network development. A solution for deployment also on the existing high speed train fleets
A. Ghelardini, A. Gatti, D. Russo, P. Masini, Trenitalia S.p.A, Italy

D8P: An analysis of traffic demand sensitivity corresponding private rail transit transferring discounts
L. Jun, KRRI, Korea - L. Yong Taek, Jeon Nam National University, Korea
L. Young In, H. Myoung Ju, Seoul National University, Korea

D9P: Maintenance optimization of train air conditioning system
W. Lair, R. Ziani, SNCF, France - S. Mercier, Université de Pau et des Pays de l’Adour, France
M. Roussignol, Université Paris-Est Marne-la-Vallée, France

D10P: Prospect of Technology for Public Transit Planning using Smart Card Data
I. Lee, SM. Oh, JH. Min, KRRI, Korea

D11P: Leaky Waveguide Radar System for Fall on Track Object Detection and Identification
A. Mroué, M. Heddebaud, F. Elbahhar, INRETS, France - A. Rivenq, IEMN, France

D12P: A Study of On-board Self-service Fare Collection: Passenger Flow Test of Two Types of On-board Ticket Gate
S. Myojo, M. Hiroshi, S. Yoichi, RTRI, Japan

D13P: Development of A Vision based Railway Platform Safeguard
S. Oh, KRRI, Japan - J. Won, G. Kim, TS KRRI, Japan

D14P: An increased modal share for medium and long distance rail passenger traffic
B. Olsson, C. Irving, M. Lundgren, Trafikverket, Sweden
**D15P:** Dynamic conditions of urban and suburban railway vehicles: Influence in passenger comfort and safety  
*R. Palacin*, Newcastle University, UK - *J. Powell*, Alstom Transport, UK

**D16P:** Influences of service quality on the choice of transport mode in regional transport  
*C. Richter, S. Keuchel*, University of Applied Sciences Gelsenkirchen, Germany

**D17P:** Optimization System for Train Set Planning of Inter-City Rapid Trains with the Application of the Flexible Seat Class Assignment Approach  
*M. Shibata*, RTRI, Japan - *S. Terabe, H. Uchiyama*, Tokyo University of Science, Japan

**D18P:** Study of Ride Comfort on the Korean Tilting Train eXpress through Bio-signal indices  
*S. Yongsoo, K. Baek-Hyun, J. Rag-Gyo, K. Yong-Kyu*, KRRI, Korea

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**Challenge E: Bringing the territories closer together at higher speeds**

**E1P:** Enhancement of Current Collection through RealTime Implementation of Control Strategies for active pantograph  
*F. Bartolini, S. Hedayati Kia, A. Mpanda-Mabwe*, Ecole Supérieur d’Ingenieurs en Electrotechnique et Electronique d’Amiens (ESIEE), France  
*L. Pugi*, University of Florence, Italy - *R. Ceschi*, Ecole Supérieur d’Ingenieurs en Electrotechnique et Electronique d’Amiens (ESIEE), France - *B. Allotta*, University of Florence, Italy

**E2P:** Stochastic continuum modeling of the ballast  
*S. Costa d’Aguilar*, SNCF, France - *R. Cottereau*, École Centrale Paris, France  
*JC. Quezada Guajardo, R. Perales, G. Saussine*, SNCF, France

**E3P:** Study of composition draft on automatic changeover system in neutral section of electric railway catenary system for highspeed train line  
*J. Donguk, H. Moonseob, C. Sanghoon*, KRRI, Korea

**E4P:** A moving mesh FEM applied to the dynamic interaction catenary-pantograph  
*JR. Jimenez-Octavio, C. Sanchez-Rebollo, A. Camicero*, Universidad Pontificia Comillas, Spain

**E5P:** Control Method of the Assist Steering System for Bolsterless Bogie Considering with Fail-safe Function  
*S. Kamoshita, M. Ishige, Y. Umehara*, RTRI, Japan

**E6P:** Experimental Study about the Effect of a Partial Vacuum in the Tunnel on the Speed-up of a Super-speed Train Model of Moving Model Test Rig  
*BB. Kang, DH. Kim, P. Shin*, KRRI, Republic of Korea

**E7P:** Design and Improvement of the Thrust Force Characteristic of a LSM for a propulsion/levitation of the 700km/h-speed tube train  
*HW. Lee, CB. Park, BS. Lee*, KRRI, Korea

**E8P:** Noise radiated by a TGV Duplex running at 360 km/h: a summary of results and reduction potential  
*F. Poisson, O. Coste*, SNCF, France - *S. Bouvet*, Signal Developpement, France - *N. Vincent*, Vibratec, France

**E9P:** A Hardware-in-the-loop Simulation System reproducing the actual running condition of the train consisting of multiple cars  
*Y. Maki, K. Sasaki, N. Watanabe, T. Shimomura, T. Tohtake*, RTRI, Japan

**E10P:** Pantograph modelling for the optimization of its dynamical behaviour  
*JP. Massat*, SNCF, France - *H. Dupuis*, Vibrateam, France - *TML. Nguyen*, SNCF, France - *A. Bobillot*, Vibrateam, France

**E11P:** Influence of Pantograph Characteristics on the Overhead Contact Quality for High Speed Trains  
*M. Pereira, J. Pombo, J. Ambrósio*, IDMEC, Portugal
E12P: Maximisation of the use of the Spanish High-Speed network through the implementation of optimal rail infrastructure charges

M. Sanchez-Borras, O. Criado, CENIT-UPC, Spain

E13P: Influence of wind effects on the catenary cable system behavior

C. Sanchez-Rebollo, A. Camicero, J.R. Jimenez-Octavio, Universidad Pontificia Comillas, Spain

E14P: A Model Experiment Investigation of Superconducting Maglev Vehicle Dynamics and Vibration Control

E. Suzuki, K. Watanabe, H. Hoshino, T. Yonezu, RTRI, Japan

E15P: High speed lines parallel to conventional lines introduce additional EMC requirements

J. Welvaarts, Lloyd’s Register Rail Europe B.V., The Netherlands

**Challenge F: Even more trains even more on time**

F1P: Future Resilient Transport Networks (FUTURENET)

C. Baker, A. Quinn, L. Chapman, University of Birmingham, UK

F2P: Preconditions for a Sustainable Low Cost Track

M. Enzi, P. Veit, Graz University of Technology, Austria - S. Marschnig, LCC rail consult, Austria

F3P: Development of Hierarchical Conflict Detection and Resolution System

K. Kim, SH. Hong, KRRI, Korea

F4P: Numerical investigation of the tamping process

R. Perales, G. Saussine, SNCF, France - N. Milesi, RFF, France - F. Radjai, LMGC, France

F5P: Performance of a constraint-based scheduling model for optimal train dispatching

J. Rodriguez, G. Marlière, S. Sobieraj, Université Lille-Nord de France - INRETS, France

F6P: Train Position and Speed Estimation by Integration of Odometers and IMUs

G. Vettori, University of Florence, Italy - M. Malvezzi, University of Siena, Italy
B. Allotta, L. Pugi, A. Ridolfi, University of Florence, Italy
F. Cuppini, F. Salotti, A. Paganone, ECM S.p.A., Italy

**Challenge G: An even more competitive & cost efficient railway**

G1P: 4G Communication Technologies for Train to Ground Communication Services: LTE versus WiMAX, a simulation study

M. Aguado, I. Lledo Samper, J. Astorga, University of the Basque Country, Spain

G2P: CoStrIM - Contact Strip/Wire Interaction of Materials

T. Anderl, G. Auditeau, M. Adams, Deutsche Bahn AG, Germany

G3P: Experimental analysis of effect of plain carbon and impregnated carbon contact strips on contact wire wear

G. Bucca, Politecnico di Milano, Italy - G. Auditeau, SNCF, France
A. Collina, E. Tanzi, Politecnico di Milano, Italy

G4P: A.D.O.R.E (Aide au Diagnostic des Organes de Roulements en Etablissements) - Predictive diagnosis of axle bearings condition

D. Chavance, R. Vionnet, S. Bellaj, F. Camincher, SNCF, France

G5P: An investigation of rail squats from several perspectives

W. Daniel, School of Mechanical and Mining Engineering, University of Queensland, Australia
R. Jones, Monash University, Australia - S. Simson, Central Queensland University, Australia
M. Kerr, Railcorp, Australia

G6P: Optimisation of a Rail Track Inspection Scheduling Problem

D. De Almeida, S. Lannez, J. Damay, SNCF, France
G7P: A multi-nets approach for modeling and evaluating rail maintenance strategies
O. François, L. Bouillaut, IFSTTAR, France - S. Dubois, RATP, France

G8P: Design and Performance of Elastic Fastening System Assemblies and Measurement of Rail Seat Pressure Distribution for Concrete Sleepers for Heavy-Haul Service
MJ. Gutierrez Romero, J.R. Edwards, C.P.L. Barkan, University of Illinois at Urbana Champaign, USA
B. Wilson, Amsted Rail Company, Inc., USA
J. Mediavilla, Unit Rail, a Division of Amsted Rail Company, Inc., USA

G9P: An Evaluation Method for Signalling System Based on Concept of Availability
S. Hiraguri, K. Iwata, I. Watanabe, RTRI, Japan

G10P: Behaviour of a portion of railway track under maintenance operation
TMP. Hoang, G. Sausssine, SNCF, France - P. Alart, D. Dureiss, University of Montpellier II, France

G11P: Hydraulic Mechanisms of the Deterioration of Concrete Sleeper Rail Seats
R. Kernes, JR. Edwards, University of Illinois at Urbana-Champaign, USA
JC. Zeman, Farnsworth Group, Inc., USA
DA. Lange, CPL. Barkan, University of Illinois at Urbana-Champaign, USA

G12P: Measuring productivity of Korean railways following the railway restructuring
HW. Kim, DS. Moon, KRRI, Korea

G13P: “PSiSE” Project: facilitating testing for high-speed substations
JC. Martinez Acevedo, C. Tobajas, ADIF, Spain - S. Osma Ruiz, Ineco, Spain
IJ. Iglesias, ADIF, Spain

G14P: Study on the Running Stability of the Dual Mode Vehicle (DMV)

G15P: Railway edges, ecological corridors: how to conciliate biodiversity and economic management of vegetation?
C. Penone, SNCF, France - N. Machon, R. Julliard, MNHN (Muséum Nationam d’Histoire Naturelle), France
JP. Pujols, F. Lauzeral, SNCF, France
I. Le Viol, MNHN (Muséum Nationam d’Histoire Naturelle), France

G16P: Progress of Urban Maglev Program in Korea
BC. Shin, WJ. Kim, DY. Park, JG. Beak, HS. Kang, Center for Urban Maglev Program, Korea

G17P: Presentation of the EU FP7 AeroTRAIN project and first results
M. Sima, Bombardier, Sweden - M. Couturier, UNIFE, Belgium
E. Grappein, Alstom Transport, France - M. Weise, Bombardier, Sweden
N. Parado, SNCF, France - M. Hieke, Deutsche Bahn AG Germany
C. Baker, R. Liciardello, University of Birmingham, UK

G18P: Evaluation of rail pad property on impact force
M. Suzuki, D. Sato, M. Hansaka, S. Mamada, N. Yaguchi, O. Wakatsuki, RTRI, Japan

G19P: A High-performance Inspection System of Tunnel Wall Deformation Using Continuous Scan Image
M. Ukai, N. Nagamine, B.T. Nassu, RTRI, Japan

Challenge H: For an even safer and more secure railway

H1P: Numerical Simulation of Competition between Short Crack Growth and Wear in Rail head
M. Akama, RTRI, Japan - F. Ohy, AdvanceSoft, Japan - M. Tsujie, H. Doi, RTRI, Japan

H2P: Influence of the sand to ATC signal in Korea High-speed Train (KTX)
Y. Cha-Jung, Korea railroad, Korea - K. Jae-Doons, Chungnam National University, Korea

H3P: Improvement of track geometry standards by using vehicle simulation software
F. Coudert, V. Bourgoin, SNCF, France
H4P: Long-term structural health monitoring of a steel road-rail bridge based on symbolic data analysis
C. Cremona, Commissariat Général au Développement Durable, France
A. Curv, A. Orcesi, Laboratoire Central des Ponts et Chaussées, France
L. Dieleman, SNCF, France

H5P: Software design patterns with safety properties for safer railway applications
C. Gransart, IFSTTAR, France

H6P: Application of a central, graphically supported database for administration and publication of railway infrastructure restrictions
HP. Huber, A. Rollauer, ÖBB Infrastruktur AG, Austria

H7P: EMFs in Railway system - Evaluation of Biological Effects and Current Trends of its Health Risk Assessment
M. Ikehata, RTRI, Japan - Y. Suzuki, Tokyo Metropolitan University, Japan
S. Yoshie, RTRI, Japan - M. Taki, Tokyo Metropolitan University, Japan
T. Hayakawa, RTRI, Japan

H8P: Proposal of Automated White-Box Testing Tool for Safety Guarantee in Railway System Software
HJ. Jo, JG. Hwang, KRRI, Korea

H9P: Assessment of dropper life for a conventional line speed-up
S. Kwon, K. Lee, YH. Cho, Y. Park, S. Kwon, SH. Chang, KRRI, Korea

H10P: SADCAT, a contactless system for OCS monitoring
N. Lajnef, G. Foeillet, SNCF, France

H11P: AIDA - Help for on board recordings interpretation
D. Moreau, SNCF, France

H12P: Development of the Countermeasure against Roadbed Degradation under Ballastless Tracks for Existing Lines
K. Muramoto, T. Nakamura, RTRI, Japan

H13P: A new reliability approach for the fatigue design and maintenance of railway wheels
TML. Nguyen-Tajan, X. Lorang, F. Cocheteux, W. D’Hardivilliers, P. Tomasin, SNCF, France

H14P: Analysis of Rail Flaw Database and the Influence of Rail Metallurgy on Rail Flaws in Finnish Railroads
A. Numiikolu, M. Kauppinen, M. Vippola, Tampere University of Technology, Finland
G. Garcia, TTCI, USA - T. Vittala, Finnish Transport Agency, Finland

H15P: A Study on Improvement of Maintenance Method using Onboard Measuring System
KB. Park, TH. Lee, KORAIL, Korea

H16P: A dynamic probabilistic modeling of railway switches operating states
A. Same, C. Faicel, A. Patrice, IFSTTAR, France - A. Marc, SNCF, France
R. Jorge, IFSTTAR, France

H17P: Ballast Flying Risk Assessment Method for High Speed Line
G. Saussine, N. Paradot, E. Allain, SNCF, France - V. Gaillot, ALTEN, France

H18P: Risk Assessment Method for Train-Running Safety during Seismicity on Railway Line
M. Sogabe, K. Goto, M. Tokunaga, K. Asanuma, RTRI, Japan

H19P: Modeling Vertical Split Rim Cracking in Railroad Wheels
V. Sura, S. Mahadevan, Vanderbilt University, USA
J. Oliver, Griffin Wheel Company, USA - S. Dedmon, Standard Steel, LLC, USA,
S. Cummings, TTCI, USA