

## Registration

Fax: +49 531 231721-19  
E-Mail: [info@test4rail.org](mailto:info@test4rail.org)

### Further Information

The conference language will be English.  
[www.test4rail.org](http://www.test4rail.org) – Contact: [test4rail@dlr.de](mailto:test4rail@dlr.de)  
Payment by bank transfer after receipt of invoice.  
Terms and conditions are available on the website.

Please register using the form below or online at  
[www.its-automotive-nord.de/Test4Rail](http://www.its-automotive-nord.de/Test4Rail).

### Conference Fee \*

I hereby register as

Participant: 400 € plus 19% VAT

Pre-symposium session:  yes  
 no

Last Name \_\_\_\_\_

First Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

Fax \_\_\_\_\_

E-Mail \_\_\_\_\_

Place, Date \_\_\_\_\_

Signature \_\_\_\_\_

\*) Participation may be cancelled free of charge 4 weeks prior to the event. 50% of the attendance fee will be charged for cancellations received up to 3 weeks prior to the event. Thereafter we will be entitled to charge the full amount. You may substitute another individual with no additional costs or penalty. Cancellation must be made in writing to ITS automotive nord by e-mail to [info@its-an.de](mailto:info@its-an.de) or fax +49 531 231721-19.

## Venue

Stadthalle Braunschweig  
Leonhardplatz  
38102 Braunschweig  
Germany



## Evening Reception Venue

Altstadtrathaus – Dornse  
Altstadtmarkt 7  
38100 Braunschweig  
Germany



## Objective

The objective of the symposium is to identify new approaches for the optimization of tests of safety-critical, software-based railway systems.

Testing is an important issue in most, if not all, application areas of IT systems. And there are many approaches, methods and tools around which address that topic. In the rail domain, specific requirements related to safety and availability, as well as the complexity of present-day systems, induce an enormous effort for test and commissioning today.

The symposium shall serve to see and disseminate what has proven to be useful, to discuss what could be helpful, and to identify what might be worth trying, in order to reduce the effort.

Above that, Test4Rail 2017 will have a particular look at security. This aspect causes growing concern and will surely need a lot more attention from test engineers in years to come than it has gotten in the past.



# Test4Rail

## Symposium Test4Rail

### Testing of safety-critical, software-based railway systems

17 and 18  
October 2017

Stadthalle Braunschweig

hosted by



sponsored by



## Tuesday, 17 October 2017

09:00 Registration and Coffee

### Pre-Symposium: Tutorial on Model-based Testing

09:50 Introduction  
Hardi Hungar (DLR, DE)

10:00 Model-based unit, integration and system testing in a continuous engineering environment  
Christian Wachtendorf (BTC-ES, DE),  
Eike Römer (Willert Software Tools, DE)

12:00 Registration and Coffee / Refreshments for the participants of the Pre-Symposium

### Opening

13:00 Welcome  
Prof. Frank Köster (DLR, DE)

13:15 [Keynote 1:](#)  
[How do railways implement new technology?](#)  
Prof. Andy Doherty (Network Rail, UK)

14:00 Coffee Break

### Practice of Rail Testing

14:30 How to test effectively in CENELEC conformant interlocking development: Experiences with a lean approach  
Jürg Suter (Bär Bahnsicherung, CH)

15:00 Regression testing for the effective upgrade of an automatic track protection system  
Petr Štěpán (CTU/AZD, CZ)

15:30 Learning based testing  
Bernhard Steffen (TU Dortmund, DE)

16:00 Coffee Break

### Applied Testing

16:30 Evaluation of a UNISIG proposal for rolling stock emission measurement methodology  
Iñigo Adin (CEIT, ES)

17:00 ETCS interoperability testing based on the UNISIG Specifications Subset 110, 111, 112  
Burkhard Börner (Thales, DE)

17:30 A virtual OBCU for system tests  
Ove Kalkan (ESE, DE)

### Evening Reception

18:15 Bus shuttle to the evening reception  
18:30 Evening reception at the Old Town Hall (Dornse), Brunswick City Centre  
- Altstadtmarkt 7  
21:30 38100 Braunschweig  
Germany

## Wednesday, 18 October 2017

08:00 Registration and Coffee

08:30 [Keynote 2:](#)  
[Security threats for the rail system](#)  
Prof. Stefan Katzenbeisser (TU Darmstadt, DE)

09:15 Coffee Break

### Security

09:30 Cybersecurity Challenges for Next Generation Railways  
Christian Prehofer, Taha Cherfia (fortiss, DE)

10:00 Challenges in Testing Security Functionality  
Christian Schlehuber (DB Netz, DE)

10:30 Security of embedded hardware  
Johann Heyszl (FHG AISEC, DE)

11:00 Coffee Break

### Foundations & Technology

11:30 ETCS testing using field data  
Andreas Distler (DLR, DE)

12:00 Checking formal specifications by testing  
Udo Brockmeyer (BTC-ES, DE)

12:30 Verification techniques along the ERTMS/ETCS projects lifecycle: from modelling and simulation to on-site testing  
Maurizio Palumbo (ERTMS Solutions, BE)

13:00 Lunch

### Interlocking Testing and Authorization

14:00 State-of-the-art architectures  
State-of-the-art testing  
Jürgen Schölzel (Siemens, DE)

14:30 An RBC test environment and its application  
Alexandre Girardi (Multitel, BE)

15:00 How to validate reference models with SysML state charts and sequence diagrams  
Oliver Lemke, Henning Lammers (Signon, DE)

15:30 Conformance, interoperability, and integration testing of modular interlocking systems  
Mirko Caspar (DLR, DE)

16:00 Conclusion and Farewell  
Hardi Hungar (DLR, DE)

16:15 End of symposium

Programme is subject to alterations.

## Evening Reception

The mayor of the city of Braunschweig, Dr. Helmut Blöcker, cordially invites all participants to a reception to celebrate the 3rd Symposium Test4Rail. The reception will take place in the Old Town Hall (Dornse), Altstadtmarkt 7, 38100 Braunschweig and start at 06:30 pm on Tuesday, October 17th, 2017.

