## INVITATION

The organizing committee has the pleasure to invite you to participate in the FORMS/FORMAT 2012 Symposium on Formal Methods for Automation and Safety in Railway and Automotive Systems. After several successful events, organized commonly by the Institute for Traffic Safety and Automation Engineering, TU Braunschweig and the Department of Control and Transport Automation, Budapest University of Technology and Economics, the subsequent event of series FORMS/FORMAT symposium will be held in Braunschweig, Germany, December 12th and 13th 2012.

## AIMS AND SCOPE

Complexity in automation (systems) and safety systems in railway as well as automotive applications are dominated more and more by formal description means, methods and tools. Next to correctness and integrity checkups – especially for safety relevant systems – formal techniques provide the possibility to model, prove, simulate and check the specification of the system as well as to generate the system implementations. Requirements of the CENELEC- and IEC-Standards on formal techniques, particularly with regard to the handling of safety and dependability analysis, are to be treated in FORMS/FORMAT 2012. The main focus lies on topics facing formal techniques for railway applications and intelligent transportation systems as well as for automotive applications. Gained findings, experiences and also difficulties associated with the handling of the subject matter as well as description means and tools are to be shown.

## SCIENTIFIC COMMITTEE / CHAIRS

Prof. Dr.-Ing. Dr. h.c. mult. E. Schnieder
Technische Universität Braunschweig (D)
Institute for Traffic Safety and Automation Engineering
Prof. Dr.-Ing. habil. G. Tarnai
Budapest University of Technology and Economics (HU)
Faculty of Transportation Engineering

## PROGRAMM COMMITTEE MEMBERS

Dr. M. Antoni - SNCF (F)
Prof. Dr. J. Axmann - Volkswagen AG (D)
G. Barbu - UIC (F)
Prof. Dr. J. Braband - Siemens AG (D)
Prof. Dr. W. Damm - Technische Universität Oldenburg (D)
Prof. Dr. U. Goltz - Technische Universität Braunschweig (D)
Dr. K.-R. Hase - Deutsche Bahn AG (D)
Prof. Dr. M. Heiner - Brandenburg University of Technology at Cottbus (D)
S. Hiraguri - RTRI (J)
Prof. Dr. Y. Hirao - Nagaoka University of Technology (J)
Prof. A. Janota - University of Žilina (SK)
Prof. Dr. K. Lemmer - Deutsches Zentrum für Luft und Raumfahrt (DLR) (D)
Dr. J. Marais - IFSTTAR (F)
Prof. Dr. M. Maurer - Technische Universität Braunschweig (D)
Prof. J. McDermid - University of York (GB)
Dr. J. R. Müller - Bombardier AG (D)
Prof. Dr. A. Pretschner - Karlsruhe Institute of Technology (D)
Dr. B. Sághi - CERTUNIV (H)
Prof. Dr. H. Schlingloff - Humboldt Universität Berlin (D)
Dr. R Slovák - Bundesamt für Verkehr (CH)
Prof. Dr. G. Spiegelberg - Siemens AG (D)
Prof. Dr. C. Stiller - Universität Karlsruhe (D)
Ph.D. N. Stoytcheva - Todor Kableshkov Higher School of Transportation (BG)
Prof. Dr. T. Tang - Beijing Jiaotong University (CN)
Prof. M. Taylor - University of South Australia (AUS)
Dr. Eng. S. Tsugawa - Meijo University (J)

## TUTORIUM

For attendees who wish to spice up their knowledge on formal methods and want to be introduced to formal methods, a half day tutorium will be held at the conference on the 11th December. Attendance is limited to 30 people. If you are interested in participating the tutorium go to forms-format.de or contact us via e-mail.

## REGISTRATION FEE

**Early Bird Registration until 10th Nov.**:

| | |
|---|---|
| Participant | 500 EUR |
| University Members, Programm Committee, Speakers | 400 EUR |
| Full time students (no PhD) | 70 EUR |
| Only Tutorial Participant | 100 EUR |

**Regular Registration after 10th Nov.**:

| | |
|---|---|
| Participant | 580 EUR |
| University Members, Programm Committee, Speakers | 480 EUR |
| Full time students (no PhD) | 100 EUR |
| Only Tutorial Participant | 130 EUR |

## COMPANY APPEARANCE

We would like to offer the possibility for companies to appear on the Symposium. For this purpose a separate publication is planned in which companies can introduce themselves. This publication will be delivered to each symposium participant. Should you be interested in this opportunity, please visit the symposium web site and contact
René Hosse (hosse@iva.ing.tu-bs.de).

## LOCATION: STADTHALLE BRAUNSCHWEIG

www.forms-format.de

## CONTACT INFORMATION

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Technische Universität Braunschweig

# FORMS / FORMAT 2012

# Programme

9th Symposium on Formal Methods
for Automation and Safety
in Railway and
Automotive Systems

**in Braunschweig (Germany)**

**11th to 13th December**

NFF NIEDERSÄCHSISCHES FORSCHUNGSZENTRUM FAHRZEUGTECHNIK

MŰEGYETEM 1782

## TUTORIAL

### Tuesday, 11th December 2012

12:00      Registration of Attendees
13:00      Welcome Address
           *E. Schnieder*
13:15      Hazard Identification with Generic Hazard Lists
           *D. Beisel (iVA)*
14:00      Risk Analysis for Automotive according to ISO 26262
           *T. Ständer (iQST)*
14:45      Refreshment Break
15:15      RAMS Terminology in Standardization
           *C. Stein (iVA), J. Beugin (IFFSTAR)*
16:00      RAMS Modeling and Analysis with Petri Nets according to IEC 62551 (ProFunD)
           *J.R. Müller (Bombardier), L.M. Quiroga (iVA)*
16:45      Accident Prevention and Analysis with STAMP
           *R.S. Hosse (iVA)*
17:30      End of Tutorial

## PROGRAM

### Wednesday, 12th December 2012

08:30      Registration of Attendees

### Greeting Address
09:15      E. Schnieder, Institute for Traffic Safety and Automation Engineering, Technische Universität Braunschweig

### Invited Lectures
09:30      The Logic of Requirements - Formalizing Tracing
           *M. Broy (TU Munich)*
10:15      Unified Formats for trackside signaling data for support of putting into service and train/track integration
           M. Meyer zu Hörste (DLR), J. Tamarit (CEDEX)

### Welcome Address
11:00      J. Hesselbach, President of Technische Universität Braunschweig
11:10      Refreshment Break

### Quality and Operational Modeling
### Chairs: H. Schlingloff, Y. Hirao

11:45      PTC -- A standard without standards?
           V. Knollmann, C. Weber and M. Smith (Siemens)

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12:05      A novel evaluation method of availability using the train operation quality
           *Y. Fukuta, S. Masutani, K. Fujita, K. Yasuoka and M. Matsumoto (East Japan Railway Company)*
12:25      Formalization of Train Control System Scenario
           *D. Zhou, J. Lv, L. Yuan, K. Li and T. Tang (BJTU)*
12:45      Lunch
13:45      Decision Process for Handling Operations against Device Failures in Heavy Duty Trucks in a Platoon
           *T. Ogitsu, R. Fukuda, W.-P. Chiang, M.Omae, (Keio University) S. Kato, N. Hashimoto,(AIST) K. Aoki (JARI) and S. Tsugawa (Meijo University)*
14:05      Design Methodology - A Suitable Approach to Develop Pedestrian and Cyclist Protection?
           *A. Fürst, C. Stechert and T. Vietor (TU BS)*

### Systems and Safety Modeling
### Chairs: J. Braband, G. Tarnai

14:25      Signaling System Design for Urban Transportation: The Case of İstanbul Esenler Depot
           *. Üstolu, Ö. T. Kaymakçı, (Yıldız TU) M. S. Durmu, U. Yıldırım (Istandbul TU) and L. Akçil (Istanbul Ulaım A. .)*
14:45      Using ERTMSFormalSpecs to model ERTMS braking curves
           *L. Ferier, S. Lukicheva and S. Pinte (ERTMS Solutions)*
15:05      Structural Equation Modelling for Causal Analysis Applied to Transport Systems
           *L. Filippidis and H. Schlingloff (FIRST)*
15:25      Refreshment Break

### Requirements Specification and Tests
### Chairs: R. Hase, K. Lemmer

16:00      A Method to Verify System Requirements Specifications Based on Safety Requirements for Train Control Systems
           *K. Iwata (RTRI) and Y. Hirao (Nagaoka University)*
16:20      Automatic Traceability from Tests to Requirements by Requirement-Based Refinement
           *S. Weissleder (FOKUS), T. Girlich (Thales) and J. Krause (ifak Magdeburg)*
16:40      From Requirements to Test Cases - Applying a Functional Hierarchy and Modularity for a better Transparency
           *M. Meyer zu Hörste, C. Preuk, L. Ebrecht and K. Lemmer (DLR)*
17:00      Test Coverage Criteria for Autonomous Mobile Systems based on Coloured Petri Nets
           *R. Lill and F. Saglietti (SWE)*
17:20      End of Presentations

### Evenening Reception
18:00      Städtisches Museum Braunschweig

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### Thurdsay, 13th December 2012

### Invited Lectures
08:30      Development of Safe Control Devices in the Automotive Industry - Requirements, Methods, Outlook
           *J. Kiefer (TRW Automotive)*
09:00      Level Crossings (LXs) in ETCS -- Solutions for Hungarian Rail Networks
           *P Tóth (Budapest University of Technology)*
09:30      Refreshment Break

### Safety Modeling and Risk Assessment
### Chairs: J. Beugin, J.R. Müller

10:00      Modelling a universal rail system with a focus on interrelationships
           *J. Suter (FOT), S. Straube (Lufthansa) and F. Riesen (CISCO)*
10:20      STAMP Analysis of The 7.23 Train Accident in China
           *A. Dong and N. Leveson (MIT)*
10:40      Cybernetic Modelling of Safety-Relevant Policy Processes
           *S.S. Sikatzki (ISW) and R.S. Hosse (iVA)*
11:00      Acceptance, Approval and Certification in the Field of Urban Guided Transport Systems
           *B. Sághi, G. Tarnai and A. Cseh (BME)*
11:20      On a Standard Representation of Semi-quantitative Approaches for Risk Assessment
           *J. Braband (Siemens)*
11:40      Assessing the individual risk of rail transport for passengers and staff
           *R. Slovák, H. Meuli (BAV) and H. Schlatter (SBB)*
12:00      Lunch

### System Engineering and Operational Risk Management
### Chairs: J. Axmann, T. Tang

13:00      A Systems Engineering Tool Chain Based on Eclipse and Rodin
           *M. Jastram (Formal Mind)*
13:20      Model Based Development and Tests for openETCS Applications -- A Comprehensive Tool Chain
           *J. Feuser and J. Peleska (TZI)*
13:40      Condition Monitoring Algorithms for Freight Wagon Wheelsets
           *C. Gericke and M. Hecht (TU Berlin)*
14:00      Facing new Challenges in the Railway Industry – Dealing with the Paradigmatic Shift in Safety Cases
           *J.R. Müller, J. Poliak (Mannheim)*
14:20      The uncertainty of risk, the risk of uncertainty in railway computerized critical applications
           *M. Antoni and N. Ammad (SNCF)*
14:40      Refreshment Break

### Operational Quality Modeling
### Chairs: M. Antoni

15:10      Comparing Versions of Banker's Algorithm for Deadlock Avoidance in Resource Allocation Systems
           *M. Zarnay (FRI Zilina) and J. Marek (Smart Engine)*
15:30      Kronecker Algebra based Travel Time Analysis for Railway Systems
           *M. Volcic, J. Blieberger and A. Schöbel (TU Vienna)*
15:50      Refreshment Break

### Award Ceremony
16:15      Best Paper and Best Presenter Bestowal
17:00      End of FORMS/FORMAT 2012