



25-27 June 2019

Zilina - Slovakia

**Program of
International Workshop on
Reliability and
Safety Technologies**

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• Visegrad Fund



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RaST 2019. Time Schedule

Tuesday, June 25, 2019		
08:00-10:15	Registration	
10:15-10:30	Opening of the Conference (room C-9)	
10:30-11:30	The First Plenary Section (room C-9)	
11:30-13:00	Discussion and Team building	
12:00-14:00	Lunch	
14:00-15:40	Section RaST1 (room C-1)	Section D1 (room C-9)
15:40-16:00	Coffee/tea	
16:00-18:00	Section RaST2 (room C-1)	
18:00-20:00	Reception	
Wednesday, June 26, 2019		
08:40-10:00	Section RaST3 (room C-1)	Section D2 (room C-9)
10:00-10:30	Coffee/tea	
10:30-11:30	The Second Plenary Section (room C-9)	
11:30-12:30	Discussion and Team building	
12:30-13:30	Lunch	
13:30-21:00	Tour of the Banská Štiavnica Castle and dinner	
Thursday, June 27, 2019		
09:00-10:40	Section RaST4 (room C-1)	Section C (room C-9)
10:40-11:00	Coffee/tea	
11:00-13:00	The Third Plenary Section (room C-9)	
13:00-14:00	Lunch	
14:00-15:40	Discussion and Team building	
15:40-17:00	Section RaST5 (room C-1)	
17:00-17:15	Closing ceremony (room C-1)	

Detailed Schedule

Venue: Atrium of the Faculty of Information Sciences and Management,
University of Žilina (FRI, UNIZA)

Tuesday, June 25, 2019

Opening

10:15-10:30 (room C-9)

Welcome of the IDT Vice-Chair

Prof. Elena Zaitseva

Welcome words from the University of Žilina

Prof. Karol Matiasko

Welcome words of the Dean of the Faculty

Dr. Emil Kršák

The First Plenary Section

10:30-11:30 (room C-9)

Moderators: Prof. Frank Coolen, United Kingdom

Assistant: Ing. Roman Ceresnak, Slovakia

Prof. Coen van Gulijk (University of Huddersfield, UK)

Digital re-engineering for safety management

Section RaST1: Reliability and Safety Technologies

14:00-15:40 (room C-1)

Chair: Prof. Zdenko Šimić, The Netherlands

Assistant: Ing. Peter Sedlacek, Slovakia

Marko Cepin

European Safety and Reliability Association (ESRA) presentation

Asamh Al Luhayb, Tahani Coolen-Maturi and Frank Coolen

Smoothed Bootstrap for Survival Function Inference

Ekaterina Danilova

Comparison of the genetic algorithms to build a diagnostic tree for diagnosing single stuck-at failures

Grâce Boyer, Jean-François Pétin, Nicolae Brînzei, and Jacques Camerini

Towards generation of dependability assessment models for industrial control system

Zdenko Šimić and Reni Banov

Are events with different significance correlated? Quantitative analysis of the correlation between events with different safety significance

Michal Mrena, Peter Sedlacek and Miroslav Kvassay

Practical Applicability of Advanced Implementations of Priority Queues in Finding Shortest Paths

Section D1. Dynamical Systems and Real World Applications

14:00-15:40 (room C-9)

Chair: Prof. Oleksandra Yeremenko, Ukraine

Assistant: Ing. Michal Varga, Slovakia

Patrik Vasilovsky, Michal Kohani and Peter Jankovic

Simulation verification of location of charging stations for electric buses

Mohamed Hedi Zaghouni, János Sztrik and Melikov Agassi

Reliability Analysis of Cognitive Radio Networks

Oleksandr Lemeshko, Maryna Yevdokymenko, Oleksandra Yeremenko, Amal Mersni, Pavel Segeč and Jozef Papán

Quality of Service Protection Scheme under Fast ReRoute and Traffic Policing Based on Tensor Model of Multiservice Network

Agata Szultka, Seweryn Szultka, Stanislaw Czapp and Jacek Klucznik

Selection of Energy Storage Units by Genetic Algorithm for Mitigating Voltage Deviations

Adrian Paun, Radu Vasil, Lia Dolga, Hannelore Filipescu, Flaviu Mihai Frigura-Iliasa

Power Management and Control for a Photovoltaic Electricity Station

Jan Rabcan, Patrik Rusnak, Denisa Macekova and Miroslav Kvassay

Evaluation of data reliability based on mathematical approach of importance analysis

Section RaST2: Reliability and Safety Technologies

16:00-18:00 (room C-1)

Chair: Dr. Attila Kuki, Hungary

Assistant: Ing. Peter Sedlacek, Slovakia

Attila Kuki, Tamás Bérczes, János Sztrik and Ádám Tóth

Reliability Analysis of a Two-Way Communication System with Searching for Customers

Radim Briš and Nuong Thi Thuy Tran

A Time based Maintenance Policy Model for Unavailability Analysis of Dormant Systems

Andrej Forgáč and Igor Luykanchuk

New algorithm for Multi-Valued Decision Diagram construction

Tien T. Thach and Radim Bris

Hamiltonian Monte Carlo method for parameter estimation of the additive Weibull distribution

Daniel Krpelík, Frank P.A. Coolen and Louis J.M. Aslett

On Robust Markov Analysis for Reliability Assessment of Complex Systems using Imprecise Markov Chains

Marek Kliment, Peter Trebuňa and Jozef Trojan

Optimizing the manufacturing process on the surface treatment line by using TX Plant Simulation software tool

Section RaST3: Reliability and Safety Technologies

08:40-10:00 (room C-1)

Chair: Prof. Andriy Luntovskyy, Germany

Assistant: Ing. Peter Sedlacek, Slovakia

Andriy Luntovskyy

Performance, Reliability and Scalability for IoT

Zbigniew Matuszak

Estimating the reliability of mechatronic devices and systems with fixed and variable working structure

Peter Sedlacek, Jan Rabcan and Jozef Kostolny

Importance Analysis of Multi-State System Based on Incompletely Specified Data By Multi-Valued Decision Diagrams

Mykhailo Popov, Oleksandr Zaitsev and Irina Piestova

A Method for Determining Priorities Between Competing Interval-Valued Estimates of Experts

Sections D2. Dynamical Systems and Real World Applications

08:40-10:00 (room C6/C-9)

Chair: Dr. Iwona Dolińska, Poland

Assistant: Ing. Roman Ceresnak, Slovakia

Krzysztof Dobrzynski, Stanislaw Czapp, Jacek Klucznik, Zbigniew Lubosny, Janusz Grala, Slawomir Noske and Dominik Falkowski

Energy Losses Reduction in the Medium Voltage Cable Line – Case Study

Iwona Dolińska, Mariusz Jakubowski and Antoni Masiukiewicz

Accelerated Exhaustive Algorithm Implementation for Channel Assignment in 802.11 Networks

Dariusz Tarnapowicz, Sergey German – Galkin and Edward Jarlaczyński

Testing of a prototype of a two-segment low-speed generator with permanent magnet for a lower-power wind farm

Martin Lukac, Claudio Moraga and Michitaka Kameyama

Properties of Bent Functions in the Truth Domain

Kenichi Takada and Michitaka Kameyama

Moving Image Scene Recognition and Its Application to Highly-Safe Intelligent Systems

The Second Plenary Section

10:30-11:30 (room C-9)

Moderators: Prof. Marko Cepin, Slovenia

Assistant: Ing. Roman Ceresnak, Slovakia

Prof. Paolo Soda (Campus Bio-Medico University in Roma, Italy)

Artificial intelligence meets clinical imaging for personalized medicine in oncology

Team building event: Tour to Banská Štiavnica

13:30-21:30+

Thursday, June 27

Section RaST4: Reliability and Safety Technologies

9:00-10:40 (room C-1)

Chair: Dr. Stanislaw Czapp, Poland

Assistant: Ing. Andrej Forgac, Slovakia

Stanislaw Czapp and Daniel Kowalak

Remarks on the Subject of Back-Up Protection of Residual Current Devices

Bartosz Tarakan, Stanislaw Czapp, Krzysztof Dobrzynski, Ryszard Zajczyk and Marcin Sarnicki

Voltage Control in a Power System with Renewable Sources of Energy

Ádám Tóth, János Sztrik, Attila Kuki, Tamás Bérczes and Dmitry Efrosinin

Reliability Analysis of Finite-Source Retrieval Queues with Outgoing Calls Using Simulation

Calin Mihai Vinga, Francisc Demeter, Vlad Vatau, Flaviu Mihai Frigura-Iliasa, Marius Mirica and Mirela Iorga

Human Machine Interface for a Photovoltaic Electricity Station

Mihaela Frigura-Iliasa, Felicia Baloi, Adrian Flavius Olariu and Razvan Claudiu Petrenci

Digital Mapping of Electric Field inside High Voltage Power Stations

Section C: Computer-aided Modeling

9:00-10:40 (room C-9)

Chair: Prof. Darya Filatova, Poland

Assistant: Ing. Roman Ceresnak, Slovakia

Vladimir Sidorov, Pavel Akimov and Alexander Belostotsky

Computer-Aided Analysis of Mechanical Safety of Stadiums for the World Cup 2018 in Russia Part 1: Introduction, Creation of Finite Element Models, Structural Analysis at Basic Combinations of Loads and Impacts

Vladimir Sidorov, Pavel Akimov and Alexander Belostotsky

Computer-Aided Analysis of Mechanical Safety of Stadiums for the World Cup 2018 in Russia Part 2: Structural Analysis at Special Combinations of Loads and Impacts, Structural Health Monitoring

Uladzimir Palukha and Yuriy Kharin

Performance Analysis for Statistical Testing of Random and Pseudorandom Generators by Entropy Statistics

The Third Plenary Section

11:00-13:00 (room C-9)

Moderators: Prof. Coen van Gulijk, United Kingdom

Assistant: Ing. Roman Ceresnak, Slovakia

Prof. Marko Čepin (University of Ljubljana, Slovenia)

Reliability of Smart Grids

Prof. Min Xie (City University of Hong Kong, Hong Kong)

Opportunities and Challenges of the Reliability of AI Systems

Section RaST5: Reliability and Safety Technologies

15:40-17:00 (room C-1)

Chair: Prof. Elena Zaitseva, Slovakia

Assistant: Ing. Andrej Forgac, Slovakia

Mateusz Torbicki

An Approach to Longtime Safety and Resilience Prediction of Critical Infrastructure Influenced by Weather Change Processes

Herman Fesenko, Vyacheslav Kharchenko and Elena Zaitseva

Evaluating Reliability of a Multi-fleet with a Reserve Drone Fleet: an Approach and Basic Model

Ewa Dąbrowska

Monte Carlo Simulation based Optimization of Port Grain Transportation System Reliability

Ewa Dąbrowska and Krzysztof Kołowrocki

Stochastic Determination of Oil Spill Domain at Gdynia Port Water Area

Mateusz Torbicki

The Longtime Safety and Resilience Prediction of the Baltic Oil Terminal

Ewa Dąbrowska and Krzysztof Kołowrocki

Monte Carlo Simulation Applied to Oil Spill Domain at Gdynia Port Water Area Determination

Welcome to the metropolis of Northwest Slovakia



Žilina is a natural centre of north-western Slovakia and with a population of 83 297 inhabitants (as per May 2017) it ranks among the largest cities in Slovakia. Žilina is situated around 200 km from Bratislava, the capital of Slovakia.

Žilina is located in the valley of the Váh river, in the Žilina Basin, at the confluence of the Váh river with its tributaries Kysuca and Rajčanka. The Žilina Basin is surrounded by the mountain ranges

of Malá Fatra (Lesser Fatra), Strážovské vrchy (Strážov Hills), Súľovské vrchy (Súľov Hills), Javorníky and Kysucká vrchovina (Kysuce Highlands).

Žilina is a centre of significant political, cultural, sport and public health care institutions. The city of Žilina is the seat of the Žilina Region. Together with the Region, it keeps a stable position of the second or third place in gross domestic product per inhabitant. Its economic potential can be proven by the fact that Žilina has the biggest number of traders per thousand inhabitants. As for the number of joint stock companies and limited companies, Žilina keeps third position in Slovakia. The Slovak Commercial and Industrial Chamber in Žilina is the second biggest in Slovakia.

Nowadays, the city of Žilina represents a dynamic development accelerated by KIA Motors Slovakia investments. However, the City is not only a centre of car production, but together with the Upper Váh River Region (Horné Považie), it is an interesting tourist destination.

Interesting events held in the city of Žilina and its surroundings during the year (Carnival Slovakia, Central European Festival of Concert Art, Old Town Festival, Folklore Festival in Terchová, Medieval Day, Rajec Marathon etc.) make the development of the City tourism more dynamic.

The city of Žilina is a centre of theatres, museums, galleries, parks and sports facilities. Its historical centre is crossed by one of the longest and the most beautiful pedestrian zones in Slovakia.



Visit to Banská Štiavnica

Banská Štiavnica is a town in central Slovakia, which has a population of more than 10,000. It is a completely preserved medieval town. Because of their historical value, the town and its surroundings were proclaimed by the UNESCO to be a World Heritage Site.



Banská Štiavnica has been closely linked to the exploitation of its abundant resources of silver ore. The first mining settlement was founded by Celts in the 3rd century BC. Old Slovak fortified settlement was situated here in the 10th and 11th century. The site was called “terra banensium” (the land of miners) as early as in 1156. The common name „Schebnyzbana“ was documented for the first time in 1255. German settlers adapted the local name to the German "Schemnitz". Banská Štiavnica gained the status of a royal town in 1238, as one of the first towns in the Kingdom of Hungary.

In the Middle Ages, the town was the main producer of silver and gold in the Kingdom of Hungary. During the Ottoman Wars, Turks threat led Banská Štiavnica to build powerful fortifications, including two castles, in the 16th century. The town was also a leading center of innovation in the mining industry. In 1627, gunpowder was used there in a mine for one of the first times in the world. To drain water from the flooded mines, a sophisticated system of water reservoirs and channels, known as tajchy, was designed and built by the local scientists Jozef Karol Hell, Maximilian Hell, and Samuel Mikoviny in the 18th century.

The first mining school in the Kingdom of Hungary was founded there in 1735. This school has been transformed into the Academy of Mining (1763). In 1807, a Forestry Institute was "established under the decision of Emperor Franz I"; in 1848 the school was renamed the Academy of Mining and Forestry, 'the first technical university in the world'. The student traditions of the Academy are still living in its successors, the University of Miskolc and Slovak University of Technology in Bratislava, and colleges in Sopron, Székesfehérvár, and Dunaújváros.

In 1782, Banská Štiavnica was the third biggest town in the Kingdom of Hungary, after Pozsony (today Bratislava) and Debrecen. But the town's development was too closely linked to the mining activity which had been progressively declining since at the 19th century.



Nowadays, Banská Štiavnica is an important center of recreation and tourism, benefiting from its rich historical heritage.