

5th Interdisciplinary Conference on Production, Logistics and Traffic (ICPLT)

Conference Guide

March 17th – 18th, 2021

Online Conference



TECHNISCHE
UNIVERSITÄT
DARMSTADT

tu technische universität
dortmund





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Foreword

The Interdisciplinary Conference on Production, Logistics and Traffic (ICPLT) deals with current drivers influencing economic, technical, ecological and societal issues concerning production, logistics and traffic. The 5th ICPLT has previously been planned to take place on site at Technical University of Darmstadt on March 17th – 18th, 2021. Due to the pandemic situation of 2020 which extends to 2021 as well, for the first time in its joint effort by TU Darmstadt and TU Dortmund, the conference will be held in an online format. The conference series is organized as a bi-annual event, the 1st ICPLT 2013 in Darmstadt, the 2nd ICPLT 2015 in Dortmund, the 3rd ICPLT 2017 in Darmstadt and the 4th ICPLT 2019 in Dortmund. We are excited to continue this well-regarded contribution to scientific exchange with the 5th ICPLT 2021!

Trends like globalization, increasing volatility, digitalization and urban growth have an increasing impact on daily life and business. This can be observed in the higher congestion levels on the transport infrastructure as well as the increasing importance of logistics services or 24/7 manufacturing. To ensure competitiveness, companies and public authorities have coordinate their decisions. The basis for such coordination is an interdisciplinary approach in basic and applied research. The ICPLT offers a platform for interdisciplinary discussion which is still often neglected. This kind of discussion helps to better understand the interdependencies and conflicts of interest between the areas of production, logistics and traffic.

The focus of the 5th ICPLT is on the following core topics:

- Intermodal Transport
- Freight Transport Modelling
- Air Cargo
- Supply Chain Performance and Attractiveness
- Railway Infrastructure
- Sustainable Transport
- Production
- Transport Policy
- Warehousing
- Logistics Innovation Impact

In addition, distinguished invited speakers – Prof. Lóránt A. Tavasszy (Delft University of Technology), Prof. Gerd Riegelhuth (Hessen Mobil - Straßen- und Verkehrsmanagement, State of Hessen), and Dr. Amr Mahfouz (TU Dublin) – will address selected interdisciplinary topics in three keynotes.

The contributions to the conference were evaluated and selected on the basis of a single-blind review process. We thank the members of the Scientific Committee involved in this process very much. We are also obliged to the “Vereinigung von Freunden der Technischen Universität zu Darmstadt e.V.” for their financial support of our conference. This support underlines the scientific importance of the ICPLT!

The members of the ICPLT Conference Board wish the conference as a whole a good and sustained progress.

The Conference Board

Prof. Dr.-Ing. Manfred Boltze – Prof Dr.-Ing. Uwe Clausen – Prof. Dr. Ralf Elbert – Prof. Dr. Dr. h.c. mult. Hans-Christian Pfohl

Conference Board

The members of the Conference Board welcome all participants to the 5th Interdisciplinary Conference on Production, Logistics and Traffic.

<p>Prof. Dr.-Ing. Manfred Boltze Professor of Transport Planning and Traffic Engineering</p> <p>Civil engineer by profession, Manfred Boltze became a research associate and obtained his doctoral degree for a study on optimal cycle times in Traffic Signal Control for Road Networks from TU Darmstadt in 1988. After working as Head of the Department of Transport Planning and Traffic Engineering for Albert Speer & Partner in Frankfurt, he was appointed chair of the Institute of Transport Planning and Traffic Engineering at TU Darmstadt in 1997. His research covers a broad range of traffic and transport related topics, such as planning methodology, traffic management, transport demand management, Intelligent Transport Systems, road traffic signals, traffic safety, and transport and health. He was one of the initiators of the interdisciplinary research project “Dynamo PLV” which is the nucleus of the ICPLT conference series. Since 2016 he is involved in eHighway-related projects, currently as the coordinator of the scientific research program for the ELISA field test on motorway A5 in Germany. 38 doctoral students and more than 250 Diploma and Master students graduated under his supervision. More than 200 publications, memberships in editorial boards and advisory boards, and many other activities indicate his comprehensive commitment to promote research and education in his discipline.</p>	
<p>Prof. Dr.-Ing. Uwe Clausen Professor of Transport Logistics</p> <p>Uwe Clausen is Managing Director of the Institute of Transport Logistics at TU Dortmund and director of the Fraunhofer-Institute for Material Flow and Logistics in Dortmund (since 2001). He worked in the logistics service industry as European Operations Director at Amazon.com and logistics manager at Deutsche Post DHL. In July 1995 he achieved the title of Dr.-Ing. with a doctoral thesis on transportation network optimization at TU Dortmund. He is Representative of Fraunhofer within ECTRI European Conference of Transport Research Institutes, member of the Advisory Council of the Association of German Transportation companies and the scientific advisory board of the Bundesvereinigung Logistik e.V.. His research areas include green logistics, commercial traffic modelling, intermodal transportation, mathematical optimization, network optimization and distribution systems.</p>	
<p>Prof. Dr. Ralf Elbert Professor of Management and Logistics</p> <p>Ralf Elbert heads the Institute of Management and Logistics at TU Darmstadt since 2011. From 2009 to 2011 he held a professorship at TU Berlin for Logistics Services and Transportation. His research focusses on the management and planning of transportation networks (especially intermodal transportation networks), specifically on the analysis of freight mode choice decisions, efficiency improvements by information sharing and measures for increasing utilization of transport capacities. He is a member of the scientific advisory board of the Bundesvereinigung Logistik e.V. and Chair at the World Conference on Transport Research Society (WCTRS) B3 group for Freight Transport Operations and Intermodality. Simulation modeling is the preferred research method throughout most of his work.</p>	
<p>Prof. Dr. Dr. h.c. mult. Hans-Christian Pfohl Professor of Supply Chain and Network Management</p> <p>Professor Pfohl studied Business Management with Mechanical Engineering from 1962 to 1968 at TU Darmstadt, where he graduated as Dr. rer. pol. and habilitated (venia legendi) in business administration. From 1975 to 1982 he held the Chair of Business Administration with responsibility for “Organization and Planning” at the University of Essen. From 1982 to 2011 he held the Chair of Management and Logistics at TU Darmstadt. Since 2011 he is responsible for “Supply Chain and Network Management” at the Department Law and Economics. Since 2000 he is also a professor with responsibility for “Management and Logistics” at the Chinese-German School for Postgraduate Studies in Shanghai, China. Furthermore, Prof. Pfohl is the head of the Research & Development Committee of the European Logistics Association (ELA) and member of the ELA Board. He is also a member of the Editorial Board of the scientific journals “Logistics Research” and “The International Journal of Logistics Management“.</p>	

Scientific Committee

The members of the Conference Board express their gratitude for the support of the following members of the Scientific Committee to the 5th ICPLT in 2021:

Prof. Dr. Mats Abrahamsson

Linköping University, Sweden

Prof. Dr. Tobias Bernecker

Heilbronn University, Germany

Prof. Dr. Christoph Bode

University of Mannheim, Germany

Prof. Dr. Dragan Ciscic

University of Rijeka, Croatia

Prof. Dr. Laetitia Dablanc

University of Paris-Est, France

Prof. Dr. Alexander Eisenkopf

Zeppelin University Friedrichshafen, Germany

Prof. Dr. Nathalie Fabbe-Costes

Aix-Marseille Université, France

Prof. Dr. Hanno Friedrich

Kühne Logistics University Hamburg, Germany

Prof. Dr. Roel Gevaers

University Antwerp, Belgium

Prof. Dr. Christoph Glock

TU Darmstadt, Germany

Jun.-Prof. Dr. Eric Grosse

Saarland University, Germany

Prof. Dr. Michael Henke

TU Dortmund, Germany

Prof. Dr. Danuta Kisperska-Moron

University of Economics in Katowice, Poland

Prof. Dr. René De Koster

Erasmus University Rotterdam, Netherlands

Prof. Dr. Rudolph Large

University of Stuttgart, Germany

Prof. Dr.-Ing. Bert Leerkamp

University of Wuppertal, Germany

Prof. Dr. Michael Lehmann

University of Applied Science Erfurt, Germany

Prof. Dr. Gernot Liedtke

German Aerospace Center, Germany

Prof. Dr. Alan McKinnon

Kühne Logistics University Hamburg, Germany

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Prof. Dr. Stefan Minner

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Prof. Dr. Stefan Seuring

University of Kassel, Germany

Prof. Dr. Wolfgang Stölzle

University St. Gallen, Switzerland

Prof. Dr. Frank Straube

Technische Universität Berlin, Germany

Prof. Dr. Lóránt Tavasszy

Delft University of Technology, Netherlands

Prof. Dr. Boris Varlamov

ITMO University Saint Petersburg, Russia

Prof. Dr. Gyula Vastag

Corvinus University of Budapest, Hungary

Inge Vierth

VTI Stockholm, Sweden

Prof. Dr. Jaroslaw Witkowski

Wroclaw University of Economics, Poland

Prof. Dr. Axel Wolfermann

Darmstadt University of Applied Sciences, Germany

Keynote Speakers

Distinguished speakers address selected interdisciplinary topics in three keynotes. Beneath, you can find more information on the keynote speakers who will certainly give you new insights during 5th ICPLT.

Prof. Dr. Lóránt A. Tavasszy
Professor in Freight and Logistics, Delft University of Technology

Professor Tavasszy's research focuses on the modelling of logistics, freight transportation and spatial economic systems. He developed the classical SMILE model (Strategic Model for Integrated Logistics Evaluations) and has received personal awards from WCTRS, US TRB/FHWA and IPIC. Since 2016 he is Full Professor in Freight and Logistics at Delft University of Technology, where he works with transportation engineers, logistics specialists and supply chain management researchers. Recently he has worked with the European innovation platform ALICE as co-author of roadmaps on synchromodal transport, zero-emission logistics and the Physical Internet.



Prof. Gerd Riegelhuth
President of Hessen Mobil

For more than 20 years, Gerd Riegelhuth has been involved in traffic and mobility management issues in executive positions. He is honorary professor in the Department of Civil and Environmental Engineering at Darmstadt University of Applied Sciences. The well-renowned traffic expert is particularly interested in innovative future topics such as cooperative, connected and automated driving. He set the foundations in the ELISA project and played a key role in furthering the eHighway on the A5. Prof. Riegelhuth started working for the Hessian Road and Traffic Administration in 1988. During this period, he has held several management positions, first at the former Frankfurt Motorway Authority, later at the Hesse Traffic Center and at the headquarters of Hessen Mobil. At the same time, he was responsible for a large number of European and national research, cooperation and development projects in the field of traffic and mobility management. In November 2017, he was appointed Vice President of Hessen Mobil and finally became President of Hessen Mobil at the beginning of 2019.



Dr. Amr Mahfouz
Director of 3S Research Group and Lecturer of Management Science and Data Analytics, College of Business, Technological University Dublin (TU Dublin)

As the director of 3S Group (Smart Sustainable Solution for Complex Business Processes) and the leader of Supply Chain Management research, Dr Amr gained wide experience in a range of Decision Analysis and Supply Chain Management disciplines including Supply Chain Resilience, Crisis Management, and Supply Chain Modelling and Analytics. Amr began his career with MOBICA for integrated manufacturing (Egypt) from 2001 to 2008 as the head of Manufacturing Management Department, where he entered the world of analytic Business Modelling and Development. The experience led him to manage various projects with major companies, industry associations and government departments after joining TU Dublin in 2008. His projects portfolio includes Post-Brexit scenario mapping for Irish freight and transport sector, Inventory control and customer management in logistics, SAP implementation and Simulation-optimisation for manufacturing systems.



Virtual Site Visit

The eHighway system

In all countries, road transport with heavy vehicles will have a high share in future freight transport. When using fossil fuels for those vehicles, the resulting emissions of carbon dioxide and pollutants such as particulate matter and nitrogen dioxide put a risk on the environment and on human health. Since heavy vehicles are already contributing significantly to greenhouse gas emissions, the "eHighway" system was developed, and it was identified as a possible solution to counteract these problems.



The eHighway system allows trucks to be fed with electric energy from a catenary which is mounted above the road. An efficient implementation of such system requires studies in different fields to understand the impacts of the eHighway system on today's road infrastructure. For that purpose, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is funding three field trials, and the ELISA project is the most advanced of them. In ELISA, a 5 kilometer section of the motorway A5 in the German Federal State of Hessen is equipped with the eHighway system in both directions. The project is led by the respective road authority Hessen Mobil, and Technische Universität Darmstadt is responsible for the accompanying research.

Boltze, M., *eHighway – An Infrastructure for Sustainable Road Freight Transport*, in: Ha-Minh, C.; Dao, D.; Benboudjema, F.; Derrible, S.; Huynh, D.; Tang, A. (eds), *Innovation for Sustainable Infrastructure. Lecture Notes in Civil Engineering, CIGOS*, vol 54., Springer, 2019

Virtual Site Visit – eHighway ELISA (17th March 2021, 15:50 – 17:00)

held by Gerrit Stumpe (Business Developer eHighway at Siemens Mobility)

Participants of the "Virtual Site Visit – eHighway ELISA" will get the chance to get a close-up view of the eHighway system with its components: Overhead Line Hybrid truck (OH truck) and Overhead Line (OL) on motorway A5 near Frankfurt. Norming aspects and the European perspective will also be part of the discussion.

Gerrit Stumpe is Business Developer at Siemens Mobility, Erlangen, responsible for market analysis & preparation and pre-acquisition of eHighway projects. He started his career at Siemens AG in Hamburg in 1994. Since then he has been active in different branches such as industry automation, mobile communication, cement, pulp & paper, marine solutions and rail electrification fulfilling numerous roles including commercial project manager, account manager and commercial head of fuel cell production. In 2020 he became associated member of the working group committee for Emerging Freight Technology of world road association PIARC. He owns a degree as Bachelor of Business Administration (BBA) from Steinbeis University Berlin and a degree as Business Economist from VWA Essen.



Program

March 17 th , 2021			
Start	End	TRACK A	TRACK B
10:00	10:10	Welcome <i>Prof. Dr. Ralf Elbert - TU Darmstadt</i>	
10:10	10:40	Keynote: Freight traffic management as a service: a data-to-value living lab Prof. Dr.-Ing. Lóránt A. Tavasszy <i>Delft University of Technology</i> Moderator: Prof. Dr. Ralf Elbert - TU Darmstadt	
10:40	10:45	Time to change between online meeting rooms	
10:45	11:15	Session 1a: Promoting Intermodal Transport	Session 1b: Freight Transport Modelling
		Session Chair: Prof. Dr. Ralf Elbert <i>TU Darmstadt</i>	Session Chair: Prof. Dr.-Ing. Bert Leerkamp <i>University of Wuppertal</i>
		Enhancing container barge transport in Europe Speaker: Peter Shobayo <i>University of Antwerp, Belgium</i>	Concepts for the integration of drivers' decisions into freight transport modelling Speaker: Felix Kreuz <i>TU Dortmund, Germany</i>
11:15	11:45	Strengthening regional rail freight services – a Thuringian case study as part of the CE-Interreg project REIF Speaker: Michael Lehmann, Miriam Sprenger <i>University of Applied Sciences Erfurt, Germany</i>	Assessing the impacts of automation on national freight transport – A case study for Germany Speaker: Stephan Kirsten <i>German Aerospace Center (DLR), Germany</i>
11:45	12:00	Coffee Break	
12:00	12:30	Session 2a: Air Cargo	Session 2b: Supply Chain Performance & Attractiveness
		Session Chair: Prof. Dr.-Ing. Uwe Clausen <i>TU Dortmund</i>	Session Chair: Prof. Dr. Rudolf Large <i>University of Stuttgart</i>
		An analysis of processes and economic as well as ergonomic improvement potentials at air freight forwarders Speaker: Heiko Diefenbach <i>TU Darmstadt, Germany</i>	Review of a supply chain performance measurement system: a case study Speaker: Julian Zarrath <i>Kühne Logistics University, Germany</i>
12:30	13:00	Smart Air Cargo Trailer - Autonomous air cargo ground transportation in a mixed traffic environment (SAT) Speaker: Lars Mehrstens, Karsten Uhing <i>Fraunhofer Institute for Material Flow and Logistics, Germany</i>	Promoting the attractiveness of jobs in the logistics service provider sector Speaker: Bianca Borca <i>University of Applied Science Upper Austria, Austria</i>

Start	End	TRACK A	TRACK B
13:00	14:00	Lunch Break	
14:00	14:30	Keynote: Freight transport – Recent challenges for road authorities Prof. Gerd Riegelhuth <i>Hessen Mobil</i> Moderator: Prof. Dr.-Ing. Manfred Boltze - TU Darmstadt	
14:30	14:35	Time to change between online meeting rooms	
14:35	15:05	Session 3a: Railway Infrastructure	Session 3b: Sustainable Transport
		Session Chair: Prof. Dr.-Ing. Michael Lehmann <i>University of Applied Sciences Erfurt</i>	Session Chair: Prof. Dr. Axel Wolfermann <i>Darmstadt University of Applied Sciences</i>
		Dry port facilities in the selected land ports of Bangladesh to promote intermodal freight transport in South Asia Speaker: Razon Chandra Saha <i>Bangladesh University of Professionals, Bangladesh</i>	Cost-based method to estimate electrification potential of the German road freight transport Speaker: Michel Allekotte <i>Institut für Energie- und Umweltforschung Heidelberg GmbH, Germany</i>
15:05	15:35	A micro-macro modelling approach for evaluating railway infrastructure projects Speaker: Joana Cunha <i>Universidade de Lisboa, Portugal</i>	Cost structures of renewable energy systems for long haulage road freight transport Speaker: Kristina Holmgren <i>Swedish Road and Transport Research Institute, Sweden</i>
15:35	16:05	Development of a perception system for railway shunting Speaker: Matthias Blumenschein <i>University of Applied Science Aachen, Germany</i>	Factors influencing the integration process of the eHighway system by transport companies Speaker: Regina Linke <i>TU Darmstadt, Germany</i>
16:05	16:20	Coffee Break	
16:20	17:20	Virtual site visit - eHighway ELISA <i>Gerrit Stumpe, Siemens Mobility GmbH</i> Moderator: Prof. Dr.-Ing. Manfred Boltze - TU Darmstadt	

March 18th, 2021

Start	End	TRACK A	TRACK B
09:00	09:30	<p align="center">Keynote: Supply chain resilience to business disruptions: Brexit implications on Irish food supply chains Dr. Amr Mahfouz <i>Technological University Dublin</i> Moderator: Prof. Dr. Ralf Elbert - TU Darmstadt</p>	
09:30	09:35	Time to change between online meeting rooms	
09:35	10:05	Session 4a: Production	Session 4b: Transport Policy
		Session Chair: Jun.-Prof. Dr. Eric Grosse <i>Saarland University</i>	Session Chair: Prof. Dr. Hanno Friedrich <i>Kühne Logistics University Hamburg</i>
		Conceptual approach for adaptive production line feeding system Speaker: Tamás Bódis <i>Széchenyi István University, Hungary</i>	Adoption of road pricing under new travel technologies: case study of Jordan and Brazil Speaker: Mohamad Shatanawi <i>Budapest University of Technology and Economics, Hungary</i>
10:05	10:35	Simulation-based planning of a logistics concept for modular production in the chemical industry Speaker: Maximilian Kiefer <i>TU Dortmund, Germany</i>	Modal shift for freight transport in France: will a supply policy be enough? Speaker: Francois Combes <i>Université Gustave Eiffel, France</i>
10:35	10:50	Coffee Break	
10:50	11:20	Session 5a: Warehousing	Session 5b: Logistics Innovation Impact
		Session Chair: Prof. Dr. Christoph Glock <i>TU Darmstadt</i>	Session Chair: Prof. Dr. Hans-Christian Pfohl <i>TU Darmstadt</i>
		Interdisciplinary Recommendations for Operating Micro Depots Speaker: Petra K. Schäfer <i>Frankfurt University of Applied Sciences, Germany</i>	The impact of logistics innovations in rural areas Speaker: Tobias Bernecker, Fatma Gül, Nadine Kröner <i>Heilbronn University, Germany</i>
11:20	11:50	How human capabilities are impacting the individual strain in manual order picking Speaker: Ralf Elbert, Julia Wenzel <i>TU Darmstadt, Germany</i>	Future developments in the transportation area and their impact on vehicle distribution logistics Speaker: Angelina Schenk <i>TU Dortmund, Germany</i>
11:50	11:55	Time to change between online meeting rooms	
11:55	12:05	<p align="center">Awarding & Closing <i>Prof. Dr. Ralf Elbert - TU Darmstadt</i></p>	

Online Conference Organization

The 5th ICPLT will be held as an Online Conference using the Software Zoom. The conference is organized in two concurrent virtual tracks, each addressing various topics from production, logistics and traffic.



Registration

The 5th ICPLT is **free of charge**. If you would like to participate please register here: <https://express.converia.de/frontend/index.php?sub=563>

A registration is necessary to participate in the conference!

Information for participants

The **program for the conference** is available on the website as well as inside this conference guide. The **Zoom links to participate can be accessed through the website**.

All event **times** are listed in the Central European Time (UTC +1) in the schedule.

There will be two **parallel tracks (A and B)** each day. Each track will have its own Zoom link to join the online conference. Zoom links for both tracks are valid for one day.

In between sessions distinguished **keynote speakers** will present interdisciplinary topics. Participants can access the keynotes through the Zoom link for Track A.

Each **session** can be accessed via the Zoom link for the associated track A or B. Between sessions and keynotes a time buffer for changing Zoom links was set. The committee recommends not to change Zoom meetings during a session to avoid interruptions or technical problems.

Sessions will be accompanied by a session chair. After each presentation the session chair will lead the **discussion** with support of the organization committee. Participants can raise questions either by using the chat or by raising their hand using the provided icon.

The sessions and keynotes will **not be recorded**.

A special focus has been given to the eHighway system with various scientific contributions as well as a **“Virtual Site Visit”** held by Gerrit Stumpe from Siemens Mobility. The “Virtual Site Visit” can also be accessed through the link for track A.

Information for presenters

Presentations are organized in **sessions**, each having their own specific topic. Sessions consist of two to three presentations.

Each **presentation** should be 15min long with a subsequent 10min discussion. The software tool Zoom is used for the presentation, and the discussion will be held as a live session. Questions by participants can either be raised through the chat or by raising hands using the provided icon.

Presenters can choose their **style/tool for presenting** (e.g. Microsoft PowerPoint). Each presenter will have the possibility to share their screen. As a presenter, please make sure to have a stable internet connection. In case of major technical problems, the organizing committee will have a PDF version of your presentation ready. Presenters are kindly requested to provide a PDF document of their presentation to the committee via email to icplt@log.tu-darmstadt.de until the **15th March 2021**.

If you have any additional organisational or technical questions, feel free to contact the organizing committee at icplt@log.tu-darmstadt.de.

Contact

If you have any questions during the conference, please do not hesitate to contact us.

Listed below you can find the two executive assistants of the Conference Board with contacts in case of any emerging problem or question during the course of the conference.



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