Year Report 2018
TRAIL Research School

TRAIL Research School, March 2019

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Contents

Selected Highlights TRAIL Research School 2018

- 12 PhD-students received their PhD-degree
- 21 new PhD-students started at TRAIL
- TRAIL organized 11 PhD courses and 8 PhD master classes
- TRAIL organized an international TRAIL Summer school on Automated Driving
- TRAIL organized a very successful TRAIL PhD congress in Utrecht and co-organized (with Beta) the first National Conference on Operations Management and Logistics (OML)
- TRAIL organized 8 Masterclasses and a Summer school for IenW policymakers
- TRAIL organized two sessions for the Dutch Ministry of Infrastructure and Water management in which PhD theses were presented and discussed, and two sessions on policy relevant topics: inclusive mobility and measuring effects of policies.

1. What is TRAIL Research School?

TRAIL, the research school for TRAnsport, Infrastructure and Logistics, was founded in 1994 to combine academic education, research, and applied science in a network organization of five Dutch universities (Delft University of Technology, Erasmus University Rotterdam, Radboud University Nijmegen, Eindhoven University of Technology, the University of Twente and the University of Groningen). Now, various faculties and institutes (in the field of economics, technology, policy and management, and the social and behavioral sciences) form a strong network of scientific experts in the integrated area of transport, infrastructure, and logistics.

TRAIL carries out three types of interconnected activities:

1. Training & Education: to educate PhD students and support PhD students in organizing their projects;
2. Research & Development: to initiate and stimulate academic research opportunities;
3. Knowledge Transfer: to promote and perform knowledge transfer activities among TRAIL researchers, related research institutes, and potential users (public and private).

On 31-12-2018 TRAIL counted 66 Staff members, 2 associated staff members, and 128 PhD candidates (see Appendices 2 and 3). The organizational structure of TRAIL Research School consists of the following bodies:[1]

1. Supervisory Board, consisting of representatives from the participating universities (deans), chaired by an independent chair;
2. Management Team, consisting of the Scientific Director and the Managing Director and supported by the TRAIL office;
3. Program Board, consisting of TRAIL-research theme leaders and a member of the PhD council;
4. Board of Faculty Representatives, consisting of representatives of all participating faculties (1 staff member per faculty)
5. PhD Council, consisting of six representatives of TRAIL PhD students.

Sections 2 to 4 present specific highlights in the field of Training and Education, Research and Development, respectively Knowledge Transfer. Finally, in section 5, some concluding remarks and an overall outlook of TRAIL for 2019 and further is presented.

[1] See www.rstrail.nl for the current members of the different bodies

2. Training & Education

Training & Education is the core activity of the TRAIL Research School. In 2018 TRAIL performed the following activities:

- The organization of 11 PhD courses and 9 master classes
- The organization of the 4th 1.5-year cycle of the graduate program with Research School Beta on Operations Management and Logistics (GP-OML)

2.1 TRAIL courses and master classes in 2018

Table 1 gives an overview of the TRAIL program.

With respect to the contents, the T&E program increasingly focuses explicitly on providing courses in the field of Transport, Infrastructure and Logistics (TIL) only (non-TRAIL related courses are considered to be the responsibility of the local Graduate Schools). TIL-courses provide knowledge about theories, methods, empirics, and skills for the TIL-domain. TIL-courses are provided by TRAIL or similar institutes (e.g. Beta, Disc, LNMB, Nethur, ERIM, Research Masters Stream (VU)). TRAIL has intensified the cooperation with these (and other) institutes.

With respect to the rules, the T&E program enables sufficient flexibility for students with various backgrounds and needs. Therefore, TRAIL applies the following principles/rules:

- TRAIL welcomes all PhD students (TRAIL and non-TRAIL[2] PhD students) for following courses.
- At a minimum, PhD students who follow only one or more TIL-courses receive a certificate per course. If they, in addition, successfully pass for the course (e.g. by an assignment), this will be made explicit on the certificate.
- TRAIL offers the option to go for a TRAIL diploma (15 ECTS) – for more details see our website.

[2] For non-TRAIL PhD students a fee applies, unless there is an agreement between TRAIL and the PhD student's institute. See section 3.3 for details.

Table 1: TRAIL T&E course program

I TRAIL Basic Courses [1]	***By***	***Part*** [2]	***ECTS*** [3]
TRAIL Fundamental Domain Knowledge (4d) [4]	OML	D	1 - 4
TRAIL Theories and Methods (3d)	TRAIL	T, M	1 - 3
Introduction to TRAIL and the PhD student process (0.5d)	TRAIL	S	0.25
Societal Relevance of your PhD Research (1d)	TRAIL	S	0.25 – 1
Profile of Future Employers of PhD Students (0.5d)	TRAIL	S	0.25

II General TRAIL Courses [1]	***By***	***Part*** [2]	***ECTS*** [3]
TRAIL Data-analysis and Statistics (3d) [4]	OML	S	1 - 3
Transport Innovations (1d)	TRAIL	D	1 - 2
TRAIL Writing a Literature Review in the TIL Domain (2d)	TRAIL	S	1 - 4
Writing and Publishing a TRAIL Research Article (1d)	TRAIL	S	0.5 - 1

III TRAIL Specialization Courses [1]	***By***	***Part*** [5]	***ECTS*** [3]
Discrete Choice Modelling (4d)	TRAIL	T	1 - 4
Traffic Flow Phenomena (3d)	TRAIL	I	1 - 3
Behavioural Aspects in Transport (1d)	TRAIL	I	0.5 – 1
Transport Logistics Modelling (4d) [4]	OML	L	1 - 4
Facility Logistics Management (4d) [4]	OML	L	1 - 4
Operations Research and Health Care (4d) [4]	OML	L	1 - 4
Quantitative Modelling and Analysis of Supply Chains (4d) [4]	OML	L	1 - 4
Advanced Inventory Theory (4d) [4]	OML	L	1 - 4
Freight Transport Management (4d) [4]	OML	L	1 - 4
Public Transport – Class (4d) [4]	OML	L	1 - 4

[1] Between brackets number of course days

[2] D= Domain Knowledge
T = Theory
M = Methodology
S = Skills

[3] First number = participated in course – second number = participated in course & passed assignment/exam

[4] Courses given by TRAIL and Research School Beta within the Graduate Program Operations Management and Logistics
(GP-OML).

[5] T: Transport, I: Infrastructure, L: Logistics

Table 2: TRAIL courses given in 2018

2018 – TRAIL courses				
Title	**Start date**	**No. days**	**Course leader(s)**	**ECTS**
Introduction to TRAIL and the PhD student Process	5 Feb.	0,5	Marchau & Van Wee	0.25
Writing and Publishing a 'TRAIL' Research Article	26 March	1	Chorus & Marchau	0.5 - 1
Societal Relevance of your PhD Research	31 May	1	Annema, Van Wee & Reiding	0.25 - 1
Writing a Literature Review in the TIL Domain	15 Feb.	2	Van Wee	1 - 4
Discrete Choice Analysis: micro-econometrics and machine learning approaches	1, 2 & 8 Oct.	3	Chorus & Van Cranenburgh	1 - 2

Table 3: TRAIL/Beta GP-OML courses given in 2018

2018- GP-OML courses				
Title	**Start date**	**No. days**	**Course leader(s)**	**ECTS**
Transport Logistics Modelling	21 Feb.	4	Tavasszy & Zuidwijk	1 - 4
Strategic Behavior in Service Systems	22 Feb.	2	Haviv	0.5 - 2
Capita selecta: Supply Chain Management	30 May	2	Van Donk	0.5 - 2
Data-analysis and Statistics	3 Oct.	3	Kroesen & Molin	1 - 3
Fundamental Knowledge on Transport, Infrastructure and Logistics	7 Nov.	4	Van Wee & Annema	1 - 4
Capita selecta: Modeling, queueing analysis, simulation and optimization of manufacturing systems	28 Nov.	2	Kerner	0.5 - 2

In addition, regular seminars by (inter)national renowned scholars are offered by TRAIL (see Table 4). TRAIL organizes these seminars in the 'slipstream' of public defenses of PhD's on topics related to the PhD dissertation and with input of (often international) scientists that are member of the promotion committee. Also, seminars are organized on the occasion of visiting leading academics (see Table 5).

Table 4: TRAIL seminars associated with PhD defenses in 2018

2018 – TRAIL seminar: public defence			
Title	**Date**	**No. days**	**Lecturers**
Analysing Freight Transport Networks	15 March	0,5	Sys, Jourquin, Zofio
Disruptions, Emergencies, and the Resiliency of Transport Systems	24 May	0,5	Mahmassani, Tu, Qu
Managing Railway Disruptions and Large Delays	4 July	0,5	Pellegrini, Corman, Cats, Huisman
Incorporating Behavioural science into Transport Modelling for Facing Future Challenges of Vehicle Automation	3 Dec.	0,5	Bierlaire, Boyle, Hagenzieker, Van Lint, Antoniou
Microscopic Simulation for Road Traffic Operation and Safety Evaluation: current challenges and future opportunities	20 Dec.	0,5	Vos, Elefteriadou, Toledo, Van Lint, Antoniou

Table 5: TRAIL seminars associated with visiting researchers

2018 – TRAIL seminar: visiting researcher/other			
Title	**Date**	**No. days**	**Lecturers**
Expediting Future Technologies for Enhancing Transportation System Performance	11 Apr.	0,5	Popper
A New Look at Accessibility, Transport and Well-being	26 Sep.	0,5	Delbosch
How do travellers behave during disasters? A transport perspective on measuring, modelling and controlling evacuations	9 Oct.	0,5	Various
Exploring Synchromodal Transportation Options with Simualtion Gaming	29 Oct.	0,5	Lukosch & Kourounioti

2.2 Graduate Program – Operations Management and Logistics

The 1.5 year Operations Management and Logistics (OML)-program started early 2014. The OML-program is a joint effort of the research schools TRAIL and Beta to:
1. offer PhD courses within the area Operations Management & Logistics;
2. control the quality of the offered PhD courses and the whole program.

Some specific characteristics of this GP-OML are:
- The OML program runs for 1.5 year and consists of 9 courses (each about 4-ects, including preparation and assignment);
- Per semester, three 4-day courses are given on a fixed day (Wednesday) every week at a central location in the Netherlands;
- Each course is examined by e.g. an assignment.

In 2018, the Program Board of GP-OML decided to adjust the program to a cycle of 2 years. As such, lecturers can give their course every two years in the same semester and PhD students know in which year and in which semester a course is provided. Note that a 2-year program offers the opportunity to provide some courses on a yearly basis (basic domain courses for PhD students or methodological courses) while other courses can be offered every two years.

2019 - 2020

Fall semester
- Fundamental Knowledge on Transport, Infrastructure and Logistics
- Advanced Inventory Theory
- Capita Selecta: Sustainable Operations Management
- Capita Selecta: Emergency Logistics

Spring semester
- Machine Learning
- Transport Logistics Modelling
- Passenger Transport Systems: Networks, Operations and Behavioral Models

2020 - 2021

Fall semester
- Fundamental Knowledge on Transport, Infrastructure and Logistics
- Quantitative Modelling and Analysis of Supply Chains
- Capita Selecta: Behavioral Operations Management
- Capita Selecta: Empirical Research in Supply Chain Management

Spring semester

- Machine Learning
- Freight Transport Management
- Facility Logistics Management

2.3 Evaluation results

A recent evaluation of the TRAIL T&E program over the period 2013-2018 revealed the following:

- Most basic and specialization courses are given on a regular basis (i.e. once every 1 - 1.5 year).
- Courses that are given less frequent/cancelled involve specialization courses (e.g. Transport Innovations, Behavioral Aspects in Transport, Facility Logistics Management, Operations Research and Health Care, Public Transport, Transport Policy Analysis).
- Most courses have about 10 or more participants (informal threshold for giving a course of 1 ects or more); in total …. participants followed a TRAIL courses.
- Most courses are graded highly by the students (between 7.5 and 8.5). Masterclasses on specific topics are very well attended.

The emphasis has moved to increasing the quality of courses given. Again, the credits are for the staff members and more specifically the course managers and teachers. TRAIL is very proud to see the very positive evaluation results, and the positive trend in these results (see table below), with an average of 8.5 (out of a scale from 0 to 10) for all 2018 courses.

year	average grade all courses
2013	7,8
2014	7.6
2015	8.2
2016	8.4
2017	7.9
2018	8.5

2.4 The TRAIL Graduate School program

Bert van Wee (TRAIL), Hans van Lint (TUD/TIL), and Vincent Marchau (TRAIL) successfully applied in 2013 for a NWO Graduate Program (GP) grant. This enabled 5 excellent MSc students within the domain of Transport, Infrastructure and Logistics to pursue their career as a PhD student within TRAIL. Students were free to choose their subject and promotor within the TRAIL community. PhD students have two thesis supervisors ('promotors') at two different TRAIL-universities.

In 2014 and 2015, five PhD students started their PhD:

➔ Mariska van Essen (UTwente-TU Delft)
➔ Fanchao Liao (TU Delft – UTwente)
➔ Konstanze Winter (TU Delft – RU)
➔ Paul van Erp (TU Delft – UT)
➔ Yihong Wang (TU Delft – TUE)

On October 5th, 2018 Mariska van Essen successfully defended her thesis: 'The Potential of Social Routing Advice'. In 2019 the progress of all PhD students will be evaluated in line with the NWO-GP requirements.

2.5 Origins of PhD students

The Table below indicates the origin of starting TRAIL PhD students within the period of 2010-2018. The figures show that:

- After strong increases in TRAIL PhD students in 2015 and 2016, 2018 marked an average year of inflow. This is related to varying research funding opportunities over different years (e.g. NWO);
- In 2018, the share of PhD students from the Netherlands increased substantially, followed by PhD students from the Middle-East.

Country	***2018***	***2017***	***2016***	***2015***	***2014***	***2013***	***2012***	***2011***	***2010***
Netherlands	8	3	14	13	2	7	6	7	9
China	2	8	10	10	10	2	5	5	1
Europe	5	5	8	1	4	0	1	5	5
Middle-East	6	2	4	1	2	2	3	4	2
North-America			1						1
South-America		1	1	1	0	0	0	0	0
Africa									1
	21	**20**	**43**	**30**	**18**	**11**	**16**	**22**	**20**

2.6 TRAIL Training and Education outlook

The education activities mentioned in section 2.1-2.3 will be continued in 2019 and further. In particular new courses will be offered (on request by the PhD students) on Machine Learning, Deep Learning, and Public Transport. In addition, the TRAIL course Theories and Methods (T&M) will be redesigned (also on request by the PhD students) from a 'catalogue/overview of T&M course' into a 'how to choose T&M course'.
TRAIL further organizes an International Summer School for PhD students on Cycling in 2019.

3. Research

TRAIL PhD students and staff members perform research activities on Transport, Infrastructure and Logistics. The logical structure of the TRAIL Research Program follows this simple triad and distinguishes the following themes and subthemes are:

A. TRAnsport and Mobility
   a. Demand – Supply Interaction
   b. Policy, Planning, and Management
B. Infrastructure and Traffic Management
   a. Drivers' Behavior
   b. (Dynamic) Traffic Management
   c. Intelligent Transport Systems
C. Logistics and Transport Organization
   a. Logistics and Supply Chain Management
   b. Transport (Service) Networks
   c. Network Design.

3.1 PhD Research

Dissertations
In 2018, 12 TRAIL PhD students received a PhD degree (see Table 5). In Appendix 1 the summaries of these theses are given.

Table 5: TRAIL PhD theses 2018

Title	Name	University[1]	Month of Defense
1. Network-Level Analysis of the Market and Performance of Intermodal Freight Transport	Hamid Saeedi	DUT	March
2. Optimal Transportation Plans and Portfolios for Synchromodal Container Networks	Bart van Riessen	EUR	March
3. Multimodal Transportation Simulation for Emergencies using the Link Transmission Model	Jeroen van der Gun	DUT	May
4. Short-turning Trains during Full Blockages in Railway Disruption Management	Nadlja Ghaemi	DUT	July
5. Residual Ultimate Strength of Seamless Metallic Pipelines with Structural Damage	Jie Cai	DUT	September
6. Maintenance Optimization for Railway Infrastructure Networks	Zhou Su	DUT	September
7. The Potential of Social Routing Advice	Mariska van Essen	UT	October
8. Cycling Safe and Sound	Agniezska Stelling-Kończak [3]	DUT	November
9. Driver Behaviour during Control Transitions between Adaptive Cruise Control and Manual Driving: empirics and models	Silvia Varotto	DUT	December
10. The Effects of using Mobile Phones and Navigation Systems during Driving	Allert Knapper	DUT	December
11. Assessment of Capacity and Risk: A Framework for Vessel Traffic in Ports	Xavier Bellsolà Olba	DUT	December

12.	**Turbulence in Traffic at Motorway Ramps and its Impact on Traffic Operations and Safety**	Aries van Beinum	DUT	December

[1] *DUT – Delft University of Technology*
UT – University of Twente
EUR – Erasmus University Rotterdam
EUT – Eindhoven University of Technology

[2] *Did not publish his book in the TRAIL Thesis Series*

[3] *Was not a TRAIL member*

In 2018, 21 PhD students started at TRAIL. Table 6 gives an overview of these new projects.

Table 6: Newly started PhD students at TRAIL in 2018

1.	**Merhnaz**	**Asadi**	Exploration of Ethical Indicators Related to Safety Effects of Policy Options to include in the Ex-ante Evaluations	TUD	TBM	
2.	**Malvika**	**Dixit**	Impact of North-South Metro Line in Amsterdam on public Transport Ridership & Quality	TUD	CiTG	AMS
3.	**Marko**	**Kapetanovic**	Improving Sustainability of Regional Railway Services	TUD	CiTG	Arriva
4.	**Roy**	**Van Kuijk**	Improvement of the Utrecht Public Transport system by the Integration of Modes	TUD	CiTG	3e geldstroom: provincie Utrecht
5.	**Anique**	**Kuijpers**	Transportation for Self-Organization trough Network Integration and Collaboration	TUD	TBM	
6.	**Rie**	**Larsen**	Predictive Synchromodality for more Efficient Container Transportation	TUD	3ME	NWO
7.	**Andreia**	**Martins Martinho Bessa**	Exploring Ways to Incorporate Ethics in Artificial Moral Beings	TUD	TBM	ERC
8.	**Ali**	**Nadi Najafabadi**	Data-driven Integrated Model for Joint Traffic and Logistics Management	TUD	CiTG	
9.	**Solmaz**	**Razmi Rad**	Performance and Safety Evaluation of Dedicated Lanes for Automated and Connected Vehicles	TUD	CiTG	
10.	**Giulia**	**Reggiani**	Managing Cyclist Flows in Urban Areas	TUD	CiTG	
11.	**Salil**	**Sharma**	Advanced Traffic Management Strategies to Improve the Reliability of Port-to-Hinterland Freight Operations	TUD	CiTG	NWO
12.	**Sanmay**	**Shelat**	Understanding Traveller Behaviour under Choices in the Context of Public Transportation using a Combination of Data Sources	TUD	CiTG	
13.	**Martijn**	**Sparnaaij**	Real-time Forecasting of Large-scale Crowd Movements	TUD	CiTG	
14.	**Tanzhe**	**Tang**	Agent-based Modelling of Moral Equilibria	TUD	TBM	
15.	**Muriel**	**Verkaik-Poelman**	Urban Traffic Estimation and Prediction Methods: the added value for urban traffic control	TUD	CiTG	NWO
16.	**Marieke**	**Versteijlen**	Optimizing Blended Learning in Higher Education from a carbon Footprint Perspective	TUD		
17.	**Jeroen**	**Vester**	Real-time Synchr-modal Planning	EUR	ESE	
18.	**Senlei**	**Wang**	Exploring Impacts of Operations of a Fleet of Shared Autonomous Vehicles: agent-based simulation model	TUD	EWI	
19.	**Jan-Jelle**	**Witte**	Parking Policy, Land Use and Sustaiable Urban Transport: the case of the shopping trip	EUR	ESE	Employer

20. Rick	**Wolbertus**	Evaluating Electric Vehice Charging Infrastructure Policies	TUD	TBM	
21. Ana	**Rodríguez Palmeiro**	How Should Automated Vehicles Communicate with Other Road Users	TUD	CiTG	NWO

DUT – Delft University of Technology: CEG – Civil Engineering and Geosciences / TPM – Technology, Policy and Management / 3ME – Mechanical, Maritime and Materials Engineering
EUR – Erasmus University Rotterdam: RSM – Rotterdam School of Management
EUT – Eindhoven University of Technology – Building Environment
UT – University of Twente: ET –Engineering Technology
RU – Radboud University: NSM – Nijmegen School of Management
RUG – University of Groningen – Economics & Business

3.2 Research highlights TRAIL staff members 2018

Research highlights are based on the information TRAIL receives from its members. These highlights are published on our website and in our monthly news bulletin.

Staff member **Oded Cats** received a ERC starting grant for his project CriticalMaaS

Staff member **Winnie Daamen** received a NWO grant for the program UMO: Urban Mobility Observatory.

Alumnus **Mariska van Essen** receives the first TRAIL Diploma according to the current TRAIL T&E program rules
Staff member **Rob Goverde** gave his inaugural speech 'Lack of ambition in much-needed modernization of Dutch railways'

Staff member **René de Koster** has been given the Francqui Chair by the University of Hasselt and he is also appointment as guest professor, for 2018, University of Science and Technology of China, USTC, Hefei, PRC. He was awarded Brabant province (with TU/e) for the project 'Fabriek van de Toekomst', part 'Advanced Manufacturing & Logistics' and a development subsidy for 'Sharehouse', TKI/NWO Living lab application (with STC, TNO and others).

Staff members **Hans van Lint and Alexander Verbraeck** received a NWO TTP grant for the MiRRORS project; Multiscale integrated traffic observatory for large road networks.

Staff member **Soora Rasouli** received a VENI for the project System for Information-Driven Modeling of Urban Activity-Travel Routines of Generic Households.

Staff member **Rob Zuidwijk** is appointed professor on "Global Supply Chains and Ports" @ RSM and also appointed as "Captain of Science" of the Top team @ Top Sector Logistics

3.3 Future developments in research

As regular funding of PhD research by Universities has almost completely disappeared, other sources for funding interdisciplinary research need to be found and developed. TRAIL will continue to play a role in finding and developing new funding opportunities if applicable.

4. Knowledge Transfer

4.1 Ktrans highlights 2018

TRAIL PhD Congress 2018
On November 15 a very successful TRAIL Congress took place in Grand Hotel Karel V in Utrecht: about 36 presentations were given, 75 PhD students and 10 staff members joint in and the atmosphere was very good. We all enjoyed it very much.

The congress was again highly rated by an 8.6 by the participants (response rate: 35%) – which is very high for a congress. TRAIL is very proud with this result.

The participants considered that acquiring experience in presenting and discussing the research by PhD Students, meeting colleagues and relations and strengthening the relation among peers within TRAIL as very successful. Also the concept of having an "open" conference - meaning that PhD students could (also) present initial research ideas, work in progress, etc. – was well appreciated. The congress sessions were very much appreciated (rate 8.5). Also the venue (location, food, rooms) was appreciated by grading an 9.2. A photo impression can be found online at the TRAIL website.



1st National Conference on Operations Management and Logistics (OML)
The first National Conference on Operations Management and Logistics (OML) was a two-day National Conference on OML which was jointly organized by Beta research School and TRAIL Research School and sponsored by TKI Logistiek and ERIM on 12 and 13 April 2018 and was a successful congress. The conference was organized with the purpose of fostering the academic OML community within the Netherlands with an interesting program which includes three plenary lectures by international speakers and 12 parallel sessions, covering the broad spectrum of research and methodologies within the area of OML. Three international keynote speakers gave a speech at the congress:
– Kai Furmans (Karlsruhe Institute of Technology, Germany)
– Mariel Lavieri (University of Michigan, USA)
– Chung Piaw Teo (National University of Singapore, Singapore)

TRAIL/IenW cooperation
As part of the collaboration between the Ministry of Infrastructure & Water management and TRAIL, two meetings were organized in which policy relevant PhD theses were presented and discussed:

- 21/03/2018 (Bert van Wee) TRAIL Lunchlezing: Welk beleid voor verstedelijking en infrastructuur, oldtimers en luchtvaart?
- 24/09/2018 (Bert van Wee, Serge Hoogendoorn): TRAIL Lunchlezing: vormgeven aan nieuwe stedelijke mobiliteit

Two meetings were organized on specific, relevant topics in the TIL-domain (in Dutch):

- 4/6/2018 (Bert van Wee)- verdiepingssessie 'Meten is weten, ook bij niet-infrastructurele maatregelen'
- 8/11/2018 (Bert van Wee, Vincent Marchau) - verdiepingssessie Inclusief transport: mobiliteit voor iedereen?

Two in-house course were organized by Bert van Wee:

- 18/1-2018 – Cursus literatuur onderzoek
- 30/11-2018 – Cursus Basiskennis transportsysteem en transportbeleid IenW

TRAIL/TUD DIMI IenW Summer school "Naar een klimaatbestendig Nederland | spel & spelers"
Twenty-one participants from IenW (including RWS), RIVM, PBL, RVO and the municipality of Kampen studied the question how the Netherlands can be made climate-proof and the role of policymakers. The Summer school was held in the first week of September. This year not only lecturers from academia, provided their cooperation, but also policymakers from the municipalities of Utrecht and Zwolle. Zwolle acted as an inspiring example for climate-proof construction, while Utrecht provided the case studies on the basis of which the participants reflected on the empire.

TRAIL/TUD-IenW Masterclasses
Since 2013, TRAIL is organising Master classes (about 8 per year) for the Ministry of Infrastructure and Water Management. These Master classes are part of an agreement between the Ministry and the TU Delft about knowledge exchange, education, cooperation, etc. During these Master classes, scientists of the TU Delft and other (often TRAIL) universities present and discuss the latest scientific insights on specific topics with policymakers. In 2018 the following 8 Master classes were organized by TRAIL (all in Dutch):

Veranderde transport systemen
Door: Albert Veenstra (TUE) en Lóri Tavasszy (TUD)
Datum: 19 maart 2018

Interconnectiviteit en Cybersecurity
Door: Michel van Eeten (TUD) en Sandro Etalle (TUE)
Datum: 22 februari 2018

Klimaatadaptatie – een meervoudige uitdaging
Door: Bas Jonkman (TUD) en Stefan Kuks (UT)
Datum: 23 april 2018

Circulaire economie en andere transities
Door: Aldert Hanemaaijer (PBL) en Katrien Termeer (WUR)
Datum: 22 mei 2018

Autonomere auto's – meer verkeersveiligheid?
Door: Dick de Waard (RUG) en Marieke Martens (UT)
Datum: 5 juni 2018

'Brede welvaart' Wat & hoe in het beleid.
Door: Bas van Bavel (UU) en Jan Anne Annema (TUD)
Datum: 18 september 2018

De toekomst van het openbaar vervoer
Door: Niels van Oort (TUD) en Henk Meurs (RU)
Datum: 12 november 2018

Publiek en privé domein onder druk
Door: Jeroen van den Hoven (TU Delft) en Hiddo Huitzing (PBL).
Datum: 11 december 2018

4.2 Outlook

Important activities in 2019 on Knowledge Transfer will be:

- TRAIL Internal PhD Congress
- TRAIL IenW cooperation:
  - Policy Relevance of TRAIL PhD Theses
  - Special Topics sessions
  - In house courses for IenW employees
- TRAIL International Summer school
- TRAIL IenW Masterclasses
- TRAIL IenW Summerschool
- And last but not least: The 25th anniversary of TRAIL Research School
- New course program (see next page)

TRAIL basic course program: March 2019

Introduction to TRAIL and the PhD student process (0.5d) *(Marchau & Van Wee)*	TRAIL	S	0.25	0.5	discipline/ research

I TRAIL Basic Courses [0,1]	***By***	***Part*** [2]	***ECTS*** [3]	***TUD GS credits***[3,4]	***TUD GS category***
TRAIL Fundamental Domain Knowledge – (4d) [5] *(Annema & Van Wee)*	OML	D	1 - 4	4 - 5	discipline
TRAIL Theories and Methods (3d) *(Marchau & others)*	TRAIL	T, M	1 - 3	3 - 5	discipline/ research[6]

II General TRAIL Courses [1]	***By***	***Part*** [2]	***ECTS*** [3]	***TUD GS credits***[3,4]	***TUD GS category***
TRAIL Data-analysis and Statistics (3d) [5] *(Kroesen & Molin)*	TRAIL	S	1 - 3	3 - 5	discipline/ research
Machine Learning (4d) 5 *(Van Hoesel)*	**OML**	**M**	**1 - 4**	**4 - 5**	**discipline/ research**
TRAIL Writing a Literature Review in the TIL Domain (2d) *(Van Wee)*	TRAIL	S	1 - 4	2 - 5	discipline/ research
Societal Relevance of your PhD Research (1d) *(Annema & Van Wee)*	TRAIL	S	0.25 – 1	0.5 - 2	discipline/ research
Writing and Publishing a TRAIL Research Article (1d) *(Geurs & Rezaei)*	TRAIL	S	0.5 - 1	1 - 2	discipline/ research
Discrete Choice Analysis: micro-econometrics and machine learning approaches (3d) *(Chorus & Van Cranenburgh)*	**TRAIL**	**T**	**2**	**3**	**discipline/ research**
Stated Choice Data Collection *(Rasouli & Caiati)*	**TRAIL**	**M**	**1**	**2**	**discipline/ research**
Transport Innovations (1d) *(Annema, Geerlings & Wiegmans)*	TRAIL	D	1 - 2	1 - 3	discipline

III TRAIL Specialisation Courses [1]	***By***	***Part*** [7]	***ECTS*** [3]	***TUD GS credits***[3,4]	***TUD GS category***
Traffic Flow Phenomena (3d)	TRAIL	I	1 - 3	3 - 5	discipline
Behavioural Aspects in Transport (1d) *(De Waard & Veldstra)*	TRAIL	I	0.5 – 1	1 - 2	discipline
Transport Logistics Modelling (4d) [5] *(Tavasszy & Zuidwijk)*	OML	L	1 - 4	4 - 5	discipline/ research
Facility Logistics Management (4d) [5] *(Adan & De Koster)*	OML	L	1 - 4	4 - 5	discipline
Quantitative Modelling and Analysis of Supply Chains (4d) [5] *(De Kok)*	OML	L	1 - 4	4 - 5	discipline/ research
Advanced Inventory Theory (4d) [5] *(Dekker & Van Houtum)*	OML	L	1 - 4	4 - 5	discipline
Freight Transport Management (4d) [5] *(Vis & Coelho)*	OML	L	1 - 4	4 - 5	discipline
Passenger Transport Systems (4d) [5] *(Cats & Schmidt)*	OML	L	1 - 4	4 - 5	discipline

New courses in bold

Yearly
Every 1,5 years
Every 2 years

Not in this list (but perhaps in the future):

- Courses Victor Knoop (ad hoc courses)
- Deep Learning by Paul van Gent – first time Spring 2019
- GP-OML Capita selecta (4)

[0] Mandatory courses for the TRAIL Diploma
[1] Between brackets number of course days

[2] D= Domain Knowledge
T = Theory
M = Methodology
S = Skills

[3] First number = participated in course – second number = participated in course & passed assignment/exam

[4] The Promotor decides about the number of TUD GS credits to be administered in DMA

[5] Courses given by TRAIL and Research School Beta within the Graduate Program Operations Management and Logistics
(GP-OML).

[6] PhD student can choose either category, since TRAIL 'methodology' and 'skills' courses are strongly linked to the TRAIL 'discipline'

[7] T: Transport, I: Infrastructure, L: Logistics

► Detailed information on all courses: www.rstrail.nl/agenda

5 Concluding remarks

2018 was a relatively stable year: we did not implement major changes. New activities involved the organization of the TRAIL International Summerschool on Automated Driving and the organization of the 1st National Conference on Operations Management and Logistics (with Beta)

The links with the PhD Council are very fruitful. Not only does the council in a proactive way provide nice suggestions, it also gives useful feedback on documents and ideas of the TRAIL office, and again helped organizing the TRAIL yearly PhD Congress.

TRAIL is very glad that the collaboration with the Ministry of Infrastructure and Water Management will be continued, and that new forms of collaboration will be further explored, including offering in house courses based on courses developed for PhD students.

Appendix 1: Overview of TRAIL Theses in 2018

1. Network-Level Analysis of the Market and Performance of Intermodal Freight Transport by Hamid Saeedi

Intermodal Freight Transport (IFT) as an alternative to road transport has been stimulated by European Commission. However, despite all efforts, the market share of IFT is limited. A fair assumption is that this limited market share could be improved by a competitive market for IFT services and improving the performance of IFT networks. In this thesis, the market structure and performance of IFT service from the network perspective are analyzed.

2. Optimal Transportation Plans and Portfolios for Synchromodal Container Networks by Bart van Riessen

This dissertation proposes an integrated approach for optimising synchromodal container transportation, by bringing together optimal transport planning in intermodal networks and the design of an optimal fare class mix of customer-oriented services. It includes 5 new models for operating such a synchromodal transportation network: service network design, disturbance analysis, real-time decision support and two variants of the cargo fare class mix design. All 5 models have been applied to case studies based on the intermodal container network of European Gateway Services, a subsidiary of Hutchison Ports ECT Rotterdam (ECT).

3 Multimodal Transportation Simulation for Emergencies using the Link Transmission Model by Jeroen van der Gun

Emergencies disrupting urban transportation systems cause management problems for authorities. This thesis develops simulation methods that permit analysis thereof and evaluation of candidate management plans, tested in three case studies. It formulates a methodological framework using agent-based choice models and multimodal macroscopic dynamic network loading models, and develops extensions of the Link Transmission Model to deal with more complex and variable fundamental diagrams and initially non-empty roads.

4 Short-turning Trains during Full Blockages in Railway Disruption Management by Nadlja Ghaemi

Railway operation is prone to disruptions that can cause track blockages for several hours. A common practice is to isolate the disrupted area by short-turning the trains that are approaching the blockage. The existing short-turning solutions are limited and inflexible. This thesis presents two (macroscopic and microscopic) multiple short-turning station optimization models that can be used in further development of a decision support system for railway disruption management.

5 Residual Ultimate Strength of Seamless Metallic Pipelines with Structural Damage by Jie Cai
In reality, metallic seamless pipelines suffer from different types of structural damage due to mechanical interference. This Ph.D. thesis deals with the structural damage and their corresponding effects on the pipes' residual ultimate bending strength through pipe experiments, numerical simulation and analytical derivation. Effective empirical formulas are proposed to predict the residual ultimate strength of damaged metallic pipes subjected to a bending moment, which can be used for practical purpose.

6 Maintenance Optimization for Railway Infrastructure Networks by Zhou Su

We develop multi-level model-based approaches for maintenance optimization for railway infrastructure networks that consider both the long-term condition-based maintenance planning and the shortterm scheduling of maintenance crews. We also develop a compact formulation for fixed-destination multi-depot multiple Traveling Salesman Problem for maintenance crew scheduling, and a numerical solution method for reverse Stackelberg game with incomplete information as framework for maintenance contract design.

7 The Potential of Social Routing Advice by Mariska van Essen

Traffic congestion is one of the main problems of today's society. This thesis deals with the problem of improving road network efficiency by the provision of social routing advice. Stated choice and revealed choice experiments provide insights into compliance behaviour, while network simulation indicates the resulting impacts. Results show that travellers are sometimes willing to comply with the received advice. As such, network efficiency improves, although individual benefits are marginal.

8 Cycling Safe and Sound by Agniezska Stelling-Kończak

Cycling safety is a major traffic safety issue both in the Netherlands and abroad. The number of cyclist fatalities in the EU has been decreasing in recent years, however at a slower rate than those of car occupants or pedestrians. One of the factors negatively influencing cycling safety may be related to limitations on availability of auditory cues. Auditory cues, such as tire and engine noises can provide important information about the presence and location of approaching traffic. Recently two trends have raised concerns about the use of auditory cues by cyclists. One is the growing popularity of electronic devices, mainly mobile phones, which are used by cyclists to listen to music or to have a conversation. The other trend concerns the increasing number of (hybrid) electric cars, which are generally quieter than conventional cars. This thesis addresses the concerns regarding these two trends.

9 Driver Behaviour during Control Transitions between Adaptive Cruise Control and Manual Driving: empirics and models by Silvia Varotto

Adaptive Cruise Control (ACC) can contribute to a reduction of traffic congestion and accidents. In certain traffic situations, drivers might prefer to deactivate ACC and resume manual control. Despite the potential effects on traffic operations, most car-following and lane changing models do not describe these control transitions. This thesis gains empirical insights into driving behaviour during control transition and develops a model framework that predicts drivers' decisions to resume manual control.

10 The Effects of using Mobile Phones and Navigation Systems during Driving by Allert Knapper

Driving might be the most complex task that many engage in on a daily basis. Drivers need to pay attention to other vehicles, cyclists and pedestrians, while keeping the car safely between the road markings and at an appropriate distance from any vehicle in front. Several factors relating to human behaviour affect the likelihood of someone being involved in a crash. This thesis focuses on drivers being distracted from mobile phones and navigation systems, and how their driving performance is affected.

11 Assessment of Capacity and Risk: A Framework for Vessel Traffic in Ports by Xavier Bellsolà

Vessel traffic in ports is a key issue due to the high increase in vessel flows that lead to busier waterways. This dissertation presents novel methodologies to assess vessel traffic in ports based on capacity and risk independently and jointly. These methodologies have been applied to case studies using simulation models and AIS data. They provide a framework to support decision makers when assessing new infrastructure designs, expansions or changes in the vessel traffic management strategies.

12 Turbulence in Traffic at Motorway Ramps and its Impact on Traffic Operations and Safety by Aries van Beinum

In the vicinity of motorway ramps, multiple manoeuvres are performed by drivers that are entering or exiting the motorway, and by drivers that anticipate on, or cooperate with, the other entering and exiting vehicles. These manoeuvres involve lane-changes, changes in speed, and changes in headways. This results in changes in lane flow distribution, greater speed variability and changes in headway distribution on the different lanes, with presumably a greater share of small gaps on the outside lane. In literature and motorway design guidelines, this phenomenon is referred to as turbulence. Currently, an explicit definition for turbulence is unavailable. In this thesis, therefore, an explicit definition for turbulence is introduced. Also, turbulence is expected to be present in the traffic stream at any given time, and therefore a second definition is introduced: the level of turbulence.

Appendix 2: TRAIL Staff Members on 31-12-2018

Titels			Name	University - Faculty
Dr. ir.	N.A.H.		Agatz	Erasmus Universiteit Rotterdam -RSM
Dr.	J.A.		Annema	Technische Universiteit Delft-Fac. Techniek, Bestuur en Management
Prof. dr. ir.	B.	van	Arem	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Dr.	B.		Atasoy	TU Delft- Fac. Werktuigbouwkunde, Maritieme Techniek & Technische Materiaalwetenschappen
Prof. dr. ir.	E.C.	van	Berkum	University of Twente-Fac. Engineering Technology
Dr. ir.	A.J.J.	van den	Boom	TU Delft- Fac. Werktuigbouwkunde, Maritieme Techniek & Technische Materiaalwetenschappen
Prof. dr.	K.A.		Brookhuis	Rijksuniversiteit Groningen - Faculteit der Gedrags- en Maatschappijwetenschappen
Dr.	O.		Cats	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Prof. dr. ir.	C.G.		Chorus	Technische Universiteit Delft-Fac. Techniek, Bestuur en Management
Dr. ir.	F.		Corman	TU Delft- Fac. Werktuigbouwkunde, Maritieme Techniek & Technische Materiaalwetenschappen
Dr. ir.	G.		Correia	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Prof.	R.		Curran	Technische Universiteit Delft - Faculteit der Luchtvaart- en Ruimtevaarttechniek
Dr. ir.	W.		Daamen	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Dr.	A.		Dabiri	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Prof. dr. ir.	B.		De Schutter	TU Delft- Fac. Werktuigbouwkunde, Maritieme Techniek & Technische Materiaalwetenschappen
Prof. dr. ir.	R.		Dekker	Erasmus Universiteit Rotterdam - Faculteit der Economische Wetenschappen
Dr.	H.F.		Farah	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Dr.	M.S.	van	Geenhuizen	Technische Universiteit Delft-Fac. Techniek, Bestuur en Management
Prof. dr.	H.		Geerlings	Erasmus Universiteit Rotterdam - Faculteit der Sociale Wetenschappen
Prof. dr. ir.	K.T.		Geurs	University of Twente-Fac. Engineering Technology
Prof. dr.	R.M.P.		Goverde	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Prof. dr.	M.P.		Hagenzieker	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Dr. ir.	A.		Hegyi	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Prof. dr. ir.	R.E.C.M.	van der	Heijden	Radboud Universiteit Nijmegen - Faculteit der Managementwetenschappen
Prof. dr. ir.	J.		Hellendoorn	TU Delft- Fac. Werktuigbouwkunde, Maritieme Techniek & Technische Materiaalwetenschappen
Prof. dr. ir.	S.P.		Hoogendoorn	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Dr.	M.		Janic	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen

MEng, Dr. techn	P.		Jittrapirom	Radboud Universiteit Nijmegen - Faculteit der Managementwetenschappen
Dr.	V.L.		Knoop	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Prof. dr.	M.B.M.	de	Koster	Erasmus Universiteit Rotterdam -RSM
Dr. ir.	M.		Kroesen	Technische Universiteit Delft-Fac. Techniek, Bestuur en Management
Dr. ir.	F.A.		Kuipers	Technische Universiteit Delft - Faculteit Electrotechniek, Wiskunde & Informatica
Dr. ir.	J.H.		Kwakkel	Technische Universiteit Delft-Fac. Techniek, Bestuur en Management
Prof. ir.	H.		Ligteringen	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Prof. dr. ir.	J.W.C.	van	Lint	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Dr. rer. soc.	H.K.		Lukosch	Technische Universiteit Delft-Fac. Techniek, Bestuur en Management
Prof. dr. ir.	V.A.W.J.		Marchau	TRAIL Research School
Dr.	K.		Martens	Radboud Universiteit Nijmegen - Faculteit der Managementwetenschappen
Prof.dr.	H.J.		Meurs	Radboud Universiteit Nijmegen - Faculteit der Managementwetenschappen
Dr.	E.J.E.		Molin	Technische Universiteit Delft-Fac. Techniek, Bestuur en Management
Prof. dr.	R.R.		Negenborn	TU Delft- Fac. Werktuigbouwkunde, Maritieme Techniek & Technische Materiaalwetenschappen
Dr. ir.	R.	van	Nes	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Dr.	S.		Rasouli	Technische Universiteit Eindhoven
Dr.	J.		Riezebos	Rijksuniversiteit Groningen-Fac. Economie en Bedrijfskunde
Prof. dr.	K.J.		Roodbergen	Rijksuniversiteit Groningen-Fac. Economie en Bedrijfskunde
Dr. rer. Nat.	M.E.		Schmidt	Erasmus Universiteit Rotterdam -RSM
Dr. ir.	D.L.		Schott	TU Delft- Fac. Werktuigbouwkunde, Maritieme Techniek & Technische Materiaalwetenschappen
Dr.	S.		Sharif Azadeh	Erasmus Universiteit Rotterdam - Faculteit der Economische Wetenschappen
Dr.	F.		Sharmeen	Radboud Universiteit Nijmegen - Faculteit der Managementwetenschappen
Prof. dr. ir.	L.A.		Tavasszy	Technische Universiteit Delft-Fac. Techniek, Bestuur en Management
Prof. dr.	R.H.		Teunter	Rijksuniversiteit Groningen-Fac. Economie en Bedrijfskunde
Prof. dr.	H.J.P.		Timmermans	Technische Universiteit Eindhoven
Dr.	W.W.		Veeneman	Technische Universiteit Delft-Fac. Techniek, Bestuur en Management
Dr.	J.		Veldman	Rijksuniversiteit Groningen-Fac. Economie en Bedrijfskunde
Prof. dr. ir.	A.		Verbraeck	Technische Universiteit Delft-Fac. Techniek, Bestuur en Management
Prof. dr.	I.F.A.		Vis	Rijksuniversiteit Groningen-Fac. Economie en Bedrijfskunde
Prof. dr.	D.	de	Waard	Rijksuniversiteit Groningen - Faculteit der Gedrags- en Maatschappijwetenschappen

Dr.	M.		Wang	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Prof. dr.	G.P.	van	Wee	Technische Universiteit Delft-Fac. Techniek, Bestuur en Management
Dr.	M.M.	de	Weerdt	Technische Universiteit Delft - Faculteit Electrotechniek, Wiskunde & Informatica
Prof. ir.	F.C.M.		Wegman	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Dr.	B.		Wiegmans	Technische Universiteit Delft-Fac. Civiele Techniek en Geowetenschappen
Prof. dr.	C.		Witteveen	Technische Universiteit Delft - Faculteit Electrotechniek, Wiskunde & Informatica
Prof. dr. ir.	J.C.		Wortmann	Rijksuniversiteit Groningen - Faculteit Bedrijfskunde
Dr.	S.X.		Zhu	Rijksuniversiteit Groningen-Fac. Economie en Bedrijfskunde
Prof. dr.	R.A.		Zuidwijk	Erasmus Universiteit Rotterdam -RSM

Appendix 3: Overview of TRAIL PhD projects on 31-12-2018

A. Transport & Mobility			
Titel	Name		University
An Asset Management Approach for Railway Systems	Randy	Fischer	TUD
The Relationship between Road Safety, Infrastructure and Driving Behaviour on 80 km/h Roads	Kirsten	Duivenvoorden	TUD
Uncertainty and Cost-Effectiveness of Policy Measures to Reduce CO2 Emissions from Transport	Robert	Kok	TUD
Governance of Networks of Transport and Land-use	Sara	Levy	RUN
Advanced Monitoring of Intelligent Rail Infrastructure	Kim	Verbert	TUD
Matching Public Transport Networks to Land-Use Patterns in Medium-Sized Metropolitan Regions	Kasper	Kerkman	RUN
Activity-Based Travel Demand Modeling under Uncertainty	Eleni	Charoniti	TUE
The Impact of Time on the Relationship between Travel Behaviour and the Built Environment	Paul	Coevering, van de	TUD
Consumer Preferences for Electric Vehicles	Fanchao	Liao	TUD
A New Approach to Transport Modelling by Using Ubiquitos Data: the activity-space model	Yihong	Wang	TUD
Housing Mobility in Historical Blocks in China	Wen	Jiang	TUE
Analysis of Transportation Mode Between central City and New Towns using Activity-Based Approach	Jia	Guo	TUE
Urban Transport, Accessibility, Social Exclusion and Governance in Metropolitan Areas in Indonesia	Ayu	Andani	UT
SCRIPTS: A New Generation of Activity-based Models of Travel Demand	Anna-Maria	Feneri	TUE
Policy Implications of Travel Time Budgets	Maarten	t Hoen	TUD
Synthesis of Machine Learning and Choice Modeling	Ahmad	Alwosheel	TUD
Cycling, Gender and Transport Poverty	Angela	Kloof, van der	RUN
Travel and Location Choice Behaviour of Prospective Automated Vehicle Users	Baiba	Pudane	TUD
Infrastructure Service Network Design for Automated Vehicles	Bahman	Madadi	TUD
The Next Frontier in Random Regret Minimization Modeling	Bing	Huang	TUD
Activity Based Model of Travel Demand	Valeria	Caiati	TUE
Automated Driving in Freight Transport Truck Platooning	Anirudh	Kishore Bhoopalam	EUR
Interface Design for Transitions between Manual and Automated Driving	Anika	Boelhouwer	UT

Smart Incentives for Sustainable Travel Behaviour	Nadja	Zeiske	RUG
Moral Discrete Choice Theory	Teodora	Szep	TUD
New Discrete Choice Theory for Understanding Moral Decision Making Behavior	Tom	Berg, van den	TUD
Integrating Realistic Demand Models in Public Transport Optimization	Johann	Hartleb	EUR
The Influence of Built Environment on Pedestrian and Cyclist Behavior around Metro/Railway Station	Yanan	Liu	TUE
Exploring Ways to Incorporate Ethics in Artificial Moral Beings	Andreia	Martins Martinho Bessa	TUD
Evaluating Electric Vehicle Charging Infrastructure Policies	Rick	Wolbertus	TUD
Transportation for Self-Organization trough Network Integration and Collaboration	Anique	Kuijpers	TUD
Agent-based Modelling of Moral Equilibria	Tanzhe	Tang	TUD
Exploring Impacts of Operations of a Fleet of Shared Autonomous Vehicles: agent-based simulation model	Senlei	Wang	TUD
Improving Sustainability of Regional Railway Services	Marko	Kapetanovic	TUD
Real-time Synchro-modal Planning	Jeroen	Vester	EUR
Parking Policy, Land Use and Sustainable Urban Transport: the case of the shopping trip	Jan-Jelle	Witte	EUR

B. Infrastructure & Traffic Management			
Titel	Name		University
A Multimodal Multi-Scale Traffic Model	Guus	Tamminga	TUD
Design of Network Wide Traffic Management System	Ramon	Landman	TUD
Dynamic Assessment of Multi-modal Transport Systems	Gijs	Eck, van	TUD
Maritime Traffic Model for Increased Safety and Capacity of Ports and Waterways	Yaqing	Shu	TUD
Travel Behaviour and Traffic Operations in Case of Exceptional Events	Mahtab	Joueiai	TUD
Setting Criteria for Safe Driving Behaviour on the Road	Roald	Loon, van	UT
STAQ: Static Traffic Assignment with Queuing	Luuk	Brederode	TUD
Designing and Managing the Transfer Function of Train Stations	Jeroen	Heuvel, van den	TUD
Crowd Behaviour under Exceptional Conditions	Erica	Kinkel	TUD
Nautical Traffic Modelling for Safe and Efficient Ports	Yang	Zhou	TUD
The Design of High-Speed Railway Passenger Service Plans from a Multimodal Transport Perspective	Fei	Yan	TUD
Energy-Efficient Timetable Design	Gerben	Scheepmaker	TUD
Using Cooperative ACC to form High-performance Vehicle Streams	Lin	Xiao	TUD
Demand Forecasting and Operational Strategies for Automated Taxis	Xiao	Liang	TUD
Airline/ATM Network Performance and Optimization	Yalin	Li	TUD
Impacts of Automated Driving on Traffic Flow	Freddy	Mullakkal Babu	TUD
Dynamics in Mode Choice Behavior	Marie-José	Olde Kalter	UT
Autonomous Control for Cooperative Multi-Vessel System	Linying	Chen	TUD
Potential of Increasing Road Vehicle Automation for Traffic Management Application	Paul	Erp, van	TUD
Urban Parking Management in the Times of Shared (Automated) Mobility	Konstanze	Winter	TUD
Automatic Multiscale Graph Generation from Geographical Data	Panchamy	Krishnakumari	TUD
Theory and Modelling of Acquiring, Processing and Storing Spatial Knowledge	Lara-Britt	Zomer	TUD
Line Plan Evaluation and Timetabling	Gert-Jaap	Polinder	EUR
Connected Driver Assistance and Traffic Management	Niharika	Mahajan	TUD
EMPOWER People to Reduce Car Traffic	Bingyuan	Huang	UT
The Human Factors (User Acceptance/Safety) Side of a Change Assistant System	Paul	Gent, van	TUD
Driver Behavior in the Transition of Control between Manual and Automated Driving	Bo	Zhang	UT
Modelling Route Choice and Activity Scheduling for Active Modes	Danique	Ton	TUD
Short-term Traffic Prediction	Ding	Luo	TUD
Methodology Development for Crowd/Cyclist Management and Control	Tim	Oijen, van	TUD
Interactions of Automated Driving and Vulnerable Road Users, and Implications of Automated Driving on Traffic Safety and Urban Design	Juan Pablo	Núñez Velasco	TUD

Stakeholder Acceptability of Smart Pricing Measures	Lizet	Krabbenborg	TUD
Passenger Oriented Disruption Management in Railway	Yongqiu	Zhu	TUD
Measuring, Modelling and Improving Reliability and Robustness of Urban Public Transport in a Multi-Level Context: a passenger perspective	Menno	Yap	TUD
Demand Responsive Transport Systems in SCRIPTS project	Jishnu Narayan	Sreekantan Nair	TUD
Using a Network Approach on Modelling Traffic Flow: applying the model to cases in Amsterdam and Rotterdam	Boudewijn	Zwaal	TUD
Establishing which Factors Determine the Route and Activity Choices for Active Mode Travelers in an Urban Environment based on Empirical Data	Florian	Schneider	TUD
Mobility Forecasting and Evaluation of Responsive Intelligent Public Transport Systems	Maria	Alonso Gonzalez	TUD
Scenario-based Multi-objective Automated Driving Strategies for Safe and Efficient Traffic	Na	Chen	TUD
Theory and Microscopic Modelling of Active Traffic Behaviour	Alexandra	Gavriilidou	TUD
Usage of Recorded Actual Travel Data for Long-term Demand Prediction	Jord	Vliet, van der	TUD
Active Mode Research Based on Social Media Data	Xun	Gong	TUD
Human Factors in Self-Driving Cars	Francesco	Walker	UT
Macroscopic Modelling of Active Mode Traffic	Marie-Jette	Wierbos	TUD
Cross Project Learning by an International Project Base of Large Infrastructure Projects	Yan	Liu	TUD
Lane-specific Traffic Flow Control Models	Hari Hara Sharan	Nagalur Subraveti	TUD
Online Route Planning in Response to Non-Recurrent Traffic Disruptions	Oskar	Eikenbroek	UT
Creative Re-Designing of Urban Public Space in the Era of Automated Driving, Vehicle Sharing and Electrification	Maryna	Ozturker	TUD
Sensing Platform: monitoring, modeling and forecasting urban mobility trough interactions of connected autonomous vehicles and active modes	Alphonse	Vial	TUD
Hybrid Model for freeway Traffic State Estimation and Prediction using Traffic Flow Theory and Historical Data	Tin	Nguyen	TUD
The Use of VR/AR to Determine Pedestrian Walking and Travel Choice Behaviour	Yan	Feng	TUD
Modelling Traffic Operations and Capacity Considering Driving Behaviours and Cooperative Driving at Signalized intersections	Meiqi	Liu	TUD
Managing Cyclist Flows in Urban Areas	Giulia	Reggiani	TUD
Understanding Traveller Behaviour under Choices in the Context of Public Transportation using a Combination of Data Sources	Sanmay	Shelat	TUD
How Should Automated Vehicles Communicate with Other Road Users	Ana	Rodríguez Palmeiro	TUD
Impact of North-South Metro Line in Amsterdam on public Transport Ridership & Quality	Malvika	Dixit	TUD

Advanced Traffic Management Strategies to Improve the Reliability of Port-to-Hinterland Freight Operations	Salil	Sharma	TUD
Data-driven Integrated Model for Joint Traffic and Logistics Management	Ali	Nadi Najafabadi	TUD
Real-time Forecasting of Large-scale Crowd Movements	Martijn	Sparnaaij	TUD
Exploration of Ethical Indicators Related to Safety Effects of Policy Options to include in the Ex-ante Evaluations	Merhnaz	Asadi	TUD
Improvement of the Utrecht Public Transport system by the Integration of Modes	Roy	Kuijk, van	TUD
Performance and Safety Evaluation of Dedicated Lanes for Automated and Connected Vehicles	Solmaz	Razmi Rad	TUD
Optimizing Blended Learning in Higher Education from a carbon Footprint Perspective	Marieke	Versteijlen	TUD
Urban Traffic Estimation and Prediction Methods: the added value for urban traffic control	Muriel	Verkaik-Poelman	TUD

C. Logistics and Transport Organisation			
Multi-Level Control of Large-Scale Logistic Systems	Yashar	Zeinaly	TUD
Dynamic Contracting in Infrastructures	Joris	Scharpff	TUD
Modelling and Optimization on Local Traffic Networks	Yu	Hu	TUD
Revenue Management and complexity in Public Transport	Paul	Bouman	EUR
Assessing the Gain of Sharing Demand Forecast in FMCG Supply Chains	Clint	Pennings	EUR
Design and Control of Autonomous Vehicle Storage and Retrieval Systems	Masoud	Mirzaei	EUR
Intelligent Monitoring of Railway Equipment	Alireza	Alemi	TUD
Development of Dutch Biomass Infrastructure	Ioannis	Dafnomilis	TUD
Green Port Initiatives and Environmental Fleet Investment	Xishu	Li	EUR
Simultaneous Management of Transfers on Railway Networks for Passengers and Freight Flows	Wenhua	Qu	TUD
Integration and Modernization of Transportation Systems	Xiao	Lin	TUD
Study and Optimization of the Interface between Railway Network, Container Ports/Mainports and Freight Bundling Facilities	Qu	Hu	TUD
Multi-channel Inventory Control	Arjan	Dijkstra	RUG
Information Integration for Intelligent Control of Logistics and Transport Systems	Fan	Feng	TUD
Sustainable Logistics in Fresh Food (SLIFF)	Roel	Post	RUG
Performance Interaction Model	Alf	Smolders	TUD
Analysis of Autonomous Vehicle Storage and Retrieval Systems (AVSRS)	Kaveh	Azadeh	EUR
Sustainable Logistics in Fresh Food	Arpan	Rijal	EUR
Decision Making on Distribution Structures and Distribution Centre Locations	Sander	Onstein	TUD

Incentives for Renewable Energy	Jose Alejandro	Lopez	RUG
Integrated Synchromodal Transport System Analysis	Masoud	Khakdaman	TUD
Effective Use of Reefer Containers trough the Port of Rotterdam: a transitions oriented approach	Bob	Castelein	EUR
Consolidation of Transportation Flows in Multi-Channel Retail	Joydeep	Paul	EUR
The Development of Multi-Level Capacity Control Mechanisms in Synchromodal Transport	Hobbs	White	EUR
A Green Vertical Transport Plan of Deep Sea Mining Systems	Wenbin	Ma	TUD
Integrated Optimization in Equitable Train Scheduling from Planning to Operation	Xiaojie	Luan	TUD
Developing Efficient Methods for the Robust Management of Fleets of Cooperative (Automated) Vehicles	Johan	Los	TUD
Synchromodal Transport	Alberto	Giudici	EUR
Dynamic Fleet Management of Automated Vehicles	Breno	Alves Beirigo	TUD
Physical Internet	Patrick	Fahim	TUD
Synchromodal Transportation in Multinational Cold Chains	Wenjing	Guo	TUD
Composite Indicators of Company Performance for Truck Manufacturers	Qinqin	Zeng	TUD
Supply Chain Disruption Management	Bahareh	Zohoori	TUD
Collaboration Mechanisms Design for Green Supply Chain	Kailan	Wu	TUD
Predictive Synchromodality for more Efficient Container Transportation	Rie	Larsen	TUD

*** Themes**

1. Transport & Mobility
2. Infrastructure & Traffic
3. Logistics

**** Abbreviations**

TUD Delft University of Technology
EUR Erasmus University Rotterdam
RU Radboud University Nijmegen
UT University of Twente
TUE Eindhoven University of Technology
RUG University of Groningen