

METRANS NEWS



USC University of
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CALIFORNIA STATE UNIVERSITY
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Dedicated to solving metropolitan transportation problems through
research, education, and outreach.

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I-NUF 2017 Attracts Global Audience of Urban Freight Scholars

Attendees from 18 countries gathered in Long Beach to participate in the 7th METRANS International Urban Freight Conference (I-NUF).

The event, which took place from October 18-20, 2017, hosted scholars and industry specialists who presented research on a broad range of topics, including effects of the growth of e-commerce, transformational technology, and other influences on urban freight movement. Break-out sessions and presentations were organized into seven tracks: local and last-mile pickup and delivery; trade nodes and hubs; freight modes; urban modelling and planning; new technology; changing consumption, production and spatial organization; and best practices. In addition, plenary sessions convened all participants to address far-reaching, applicable issues for the entire goods movement industry.



Opening Session Addresses State of Connected and Automated Vehicle Technology

Speakers Steven Shladover, Program Manager for the California Partners for Advanced Transportation Technology (PATH) program at UC Berkeley, and Peter Sweatman, co-founder of CAV consulting firm CAVita addressed connected and automated vehicles (CAV), clarifying common misconceptions concerning the technology and providing realistic expectations for when consumers might see widespread use of CAV in freight transportation. *continued on Page 2*

From left to right: Tom O'Brien, Camille Kamga, Jose Holguin-Veras, Laetitia Dablanc, Jee-Sun Lee, Alison Conway, Genevieve Giuliano, Henrik Nolmark.



METRANS, a partnership of the University of Southern California and California State University, Long Beach, is a US Department of Transportation designated University Transportation Center. Its mission is to solve transportation problems of large metropolitan areas through research, education, and outreach.



Dr. Jean-Paul Rodrigue

METRANS RESEARCH

MetroFreight Partner Dr. Jean-Paul Rodrigue Presents Research on Home Deliveries

MetroFreight partner Dr. Jean-Paul Rodrigue presented his research on last-mile freight deliveries at a research seminar hosted by the University of Lyon, France, on October 4, 2017. His presentation, "Comparative City Logistics: A Micro Analysis of Home Deliveries," showcased results from the first phase of his MetroFreight research project, "Decomposing the Home-Based Delivery Supply Chain Residential Parcel Deliveries: Evidence from a Large Apartment Complex." The first phase of his research analyzed parcel delivery data collected from a large apartment complex in Northern New Jersey. *continued on Page 3*

METRANS RESEARCH

I-NUF 2017 Attracts Global Audience of Urban Freight Scholars *continued from Page 1*

Shladover began by defining terminology related to CAV that is often misused in media reports. He noted that connectivity and automation occur in varying degrees and, at present, are only feasible within defined operational design domains (ODD), which set certain conditions like weather and lighting that restrict where the vehicle can travel. Specifically, he noted five broad levels of automation, ranging from a system that can only move a vehicle longitudinally or laterally (such as adaptive cruise control) to one that is operable in all road conditions and can travel anywhere without driver assistance.

Sweatman offered a broader discussion of CAV technology and its societal implications. He reviewed the current state of transportation infrastructure in the U.S. and the motivations for public- and private-sector stakeholders to support innovation in the growing market for CAV. He continued with a comparison of connected vehicles (those that feature vehicle-to-vehicle communication) and automated vehicles (those that replace or supplement manual vehicle operations with automated systems), describing how the convergence of the two, as CAV, can be applied in various use cases. Sweatman concluded with a



Opening Plenary Speakers Peter Sweatman and Steven Shladover.

prognosis for CAV, stating that early adopters will be commercial fleet operators rather than individual consumers, but consumer interactions with these early adopters will be a key driver for continued innovation in the CAV market.

Luncheon Session Presents Career Pathway Research

Leadership from the Southwest Transportation Workforce Center (SWTWC) and Long Beach Unified School District (LBUSD) addressed the value of transportation career pathway research and programmatic development during the first day's plenary luncheon session.

SWTWC Associate Director Tyler Reeb opened the session by addressing the need for transportation workforce development research and the issues that such research has identified. Reeb discussed critical workforce development challenges affecting supply chain employers such as demographic shifts, transformational technologies and associated skills gaps, competition with other industries, and the critical need for formal soft skills training.

Following Reeb's presentation, Chris Itson, Linked Learning Pathways Coordinator at Cabrillo High School, introduced the Academy of Global Logistics (AGL) program and discussed how structured career pathways

benefit students, particularly those who face socioeconomic barriers that affect their competitiveness as students and future professionals.

Itson then introduced Angelique Terrazas, an AGL student, who shared firsthand how joining AGL has influenced her goals and career prospects. Terrazas explained how she entered high school with little guidance or direction for her long-term professional goals. Her involvement in



AGL Student Angelique Terrazas speaking during the first luncheon.

AGL provided her opportunities to develop her leadership skills through coordinating fundraising for AGL. She also gained work experience in a summer internship with the Pacific Maritime Association (PMA) and, to the audience's amusement, related her amazement as she witnessed negotiations between labor union representatives and the PMA, which sometimes turned contentious.

Goodchild Addresses New Research Avenues in Urban Freight



Dr. Anne Goodchild

Dr. Anne Goodchild, founding Director of the Supply Chain Transportation & Logistics Center at the University of Washington, was the I-NUF keynote speaker, and spoke during the second lunch session. She opened her presentation with an anecdote that spotlighted the growing role of the delivery economy. As a Seattleite, Goodchild shared her love of coffee and her specific taste for whole bean, Ethiopian coffee. She searched on Amazon and was surprised to find several kinds of whole bean, Ethiopian coffee that could be same-

day delivered to her house, if she were to order in the next hour. Through her anecdote, Goodchild highlighted the seamless experience of online ordering to engage with the invisible supply chain between her online search and the delivery of her coffee.

Citing Amazon's revenue growth and impact on the city of Seattle, WA and the nation, Goodchild stressed the fact that the growing reliance on delivery systems and their expediency will require a new focus on urban freight research.

METRANS RESEARCH

MetroFreight Partner Dr. Jean-Paul Rodrigue Presents Research on Home Deliveries *continued from Page 1*

Each apartment unit generated about 1.5 parcel deliveries per week, which was about 0.5 to 0.6 deliveries per resident per week. Additionally, the results showed that parcel deliveries during weekdays are relatively uniform until they peak on Wednesdays, with 19% of all deliveries. The results also showed that only 14.1% of parcel deliveries are made on weekends.

His major research project titled, "North American and European City Logistics: Convergence or Divergence," focuses on the topic of city logistics, which analyzes the methods of freight distribution that can take place in urban areas as well as the strategies that can improve its overall efficiency while mitigating congestion and environmental externalities. It includes the provision of services that contribute to efficiently managing the movement of goods in cities and providing innovative responses to customer demands such as e-commerce. The research goal is to identify the main technological, operational, spatial, infrastructural, and jurisdictional factors in city logistics and analyze the ways that these factors are converging or diverging across a sample of North American and European cities.

Jean-Paul Rodrigue received a Ph.D. in Transport Geography from the Université de Montréal (1994) and has been a professor at Hofstra University since 1999. Dr. Rodrigue's research interests mainly cover the fields of transportation and economics as they relate to logistics and global freight distribution. His papers about port regionalization and the development of port and hinterland supply chains are among the world's most cited papers in the domain. Dr. Rodrigue is currently working on a research project in Lyon and is a visiting scholar at the Laboratoire Aménagement Economie Transports (LAET), University of Lyon.

MetroFreight is a center of excellence funded by the Volvo Research and Educational Foundations and a member of the METRANS family of centers.

**To learn more about MetroFreight
go to <https://www.metrans.org/metrofreight>.**

METRANS EDUCATION

VREF Awards Travel Scholarships for Students to Attend 2017 I-NUF



The Volvo Research and Educational Foundations (VREF) awarded eight travel scholarships to support attendance at the 2017 International Urban Freight

Conference (I-NUF) in Long Beach, California. The scholarships are aimed at promoting conference participation among Ph.D. students and junior faculty from developing countries who have an interest in urban freight but have not yet become linked with the international network. The MetroFreight Center of Excellence (CoE) administered the scholarship application process.

India, Nairobi, Netherlands, Philippines, South Africa, Sweden and South Africa. A committee of VREF research leaders selected the group of individuals to receive the scholarships.

The following are the VREF travel scholarship award recipients:

- **Alexis M. Fillone**, Professor, De La Salle University, Manila, Philippines
- **Jelibeth Paola Racedo Gutiérrez**, Ph.D. Student, Universidad de los Andes, Bogotá, Colombia
- **Sylvester William Hayker**, Assistant Lecturer, Ph.D. Student, The Technical University of Kenya
- **Abisai Konstantinus**, Ph.D. Candidate, University of Cape Town, South Africa
- **Maira Milena Delgado Lindeman**, Ph.D. Student, Universidad del Norte, Barranquilla, Colombia
- **Leeza Malik**, Research Scholar, Indian Institute of Technology Delhi, New Delhi, India
- **Oriana Andreina Calderón Quevedo**, Ph.D. Student, Universidad del Valle, Cali, Colombia
- **Abel Kebede Reda**, Lecturer, Indian Institute of Technology, Varanasi, India



From left to right: Oriana Calderon Quevedo, Leeza Malik, Sylvester Hayker, Jelibeth Racedo, Maria Delgado Lindeman

The scholarship solicitation received an enthusiastic response. Twenty-nine applications were received from representatives of 14 different countries: Australia, Belgium, Brazil, China, Colombia, Ethiopia, France,

VREF leadership acknowledged the scholarship awardees at the conference and commended them for their interest in urban freight research.

METRANS RESEARCH

PSR, Tier 1 and NCST DOT Awards

METRANS held two Executive Committee meetings at USC to select research awards for Pacific Southwest Region (PSR), Tier 1 and NCST. These meetings were held in June and August. Six projects were approved for funding under the Tier 1 center, five were approved for NCST, and thirteen were selected under PSR. Additional proposals were submitted by PSR partners UC Davis, UCLA, and University of Hawaii. In addition, two new match funding proposals were awarded. The following table lists the awarded projects for each center.

Title	Topic	University	PIs/Co-PIs
PSR			
Integrated Traffic Flow Control in a Connected Network	Technology and mobility, and smart infrastructure and vehicles	USC	Petros Ioannou
The Cost-Effectiveness of Alternative Policies for Reducing GHG Emissions in the Freight Sector	Reducing environmental impacts	USC	Antonio Bento (Co-PI: Genevieve Giuliano, Maged Dessouky)
Vertical Equity Statewide Pilot, Data Inventory, and Guidelines for Performance Based Planning	Land use, accessibility, mobility	UC Santa Barbara	Konstadinos Goulias
An Empirical Analysis of the Impact of Smart, Connected Navigation Systems on Traffic Congestion	Technology and mobility, and smart infrastructure and vehicles	USC	Milan Miric
Examining Spatial Mismatch Through a New Geography of Opportunity Index	Land use, accessibility, mobility	USC	Gary Painter (Co-PI: Marlon Boarnet)
Connected Emission Control Technologies for Freight Vehicles	Reducing environmental impacts (3-3) and smart infrastructure and vehicles	UC Riverside	Kanok Boriboonsomsin (Co-PI: Matthew Barth)
Evaluation of Autonomous Vehicles and Smart Technologies for Their Impact on Traffic Safety and Traffic Congestion	Technology and mobility	CSULB	James Miles (Co-PI: Thomas Strybel)
A Primer on Coastal Transportation System Resilience and Adaptation to Sea Level Rise on Oahu Using Living Shorelines and Green Infrastructure	Managing freight demand and its impacts	University of Hawaii	Wendy Meguro
Physical Exposure and Social Sensitivity: Estimating Sea Level Rise Impacts to Transportation through Vulnerability Assessment and Social Media Analysis	Technology and mobility	University of Hawaii	Suwan Shen (Co-PI: Yi Qiang)
Next-Generation Transit System Design Under Revolution of Shared Mobility	Environmentally responsible infrastructure and operations and multi-modal travel and sustainable land use	UC Davis	Yueyue Fan
White Paper: Socio-cultural and Historical Factors in Active Transportation	Multi-modal travel and sustainable land use	UC Davis	Sarah McCullough
Automated Analysis of Wildlife-Vehicle Conflict Hotspots Using Carcass and Collision Data	Environmentally responsible infrastructure and operations	UC Davis	Fraser Shilling
BridgeR – a Regional Seismic Hazard Assessment Tool for Transportation Networks & its Application to Freight Loss Assessment	Analyzing alternative resilience strategies and managing freight demand and its impacts	UCLA	Ertugrul Taciroglu (Co-PI: JR DeShazo)

Title	Topic	University	PIs/Co-PIs
TIER 1			
Optimizing Combined Truck Routing and Parking Based on Parking Availability Prediction	Integrated management across users and modes	USC	Petros Ioannou
Investigating Impact of Crowdsourcing on Smart Freight Mobility	Integrated management across users and modes	CSULB	Shailesh Chandra
Socially Optimal Personalized Routing with Preference Learning	Integrated management across users and modes	USC	Phebe Vayanos (Co-PI: Maged Dessouky)
Institutional Response to Transit Oriented Development in the Los Angeles Metropolitan Area: Understanding Local Differences Through the Prism of Density, Diversity, and Design	Policies for more efficient urban transportation	USC	Tridib Banerjee (Co-PI: Deepak Bahl)
Smart Sensing System for Real-time Automatic Traffic Analysis of Highway Rest Areas	Better data for analysis of passenger-freight interactions	CSULB	Mohammad Mozumdar
Measuring Congestion Costs of Car Commuters and Their Determinants: A Counterfactual Approach	Policies for more efficient urban transportation	CSULB	Jinwon Kim
NCST			
TOD Opportunities Among Failing Malls	Multi-modal travel and sustainable land use	USC	Hilda Blanco
Dynamic Scheduling of Chassis Movements with Chassis Processing Facilities in the Loop	Zero-emission vehicle and fuel technologies	CSULB	Anastasios Chassiakos (Co-PI: Shailesh Chandra)
Gentrification Near Rail Transit Areas: A Micro-Data Analysis of Moves into Los Angeles Metro Rail Station Areas	Multi-modal travel and sustainable land use	USC	Marlon Boarnet (Co-PI: Raphael Bostic)
Developing Markets for Zero-Emission Vehicles (ZEVs) in Goods Movement	Zero-emission Vehicle and Fuel Technologies	USC	Gen Giuliano (Co-PI: Maged Dessouky, Thomas O'Brien (CSULB), Seiji Steimetz (CSULB), Lew Fulton (UCD))
Freight Load Balancing and Efficiencies in Alternative Fuel Freight Modes	Environmentally Responsible Infrastructure and Operation	USC	Petros Ioannou (Co-PI: Matthew Barth (UCR))

METRANS RESEARCH

METRANS Leadership, NCST Partners, Participate in 2017 Asilomar Biennial Conference

METRANS Director Genevieve Giuliano and Associate Director Tom O'Brien attended the sixteenth ITS Davis biennial conference on transportation and energy. The conference, entitled, "Transportation Innovation and Policy in a Fragmenting World," was held from August 22-25, 2017 at the Asilomar Conference Grounds in Pacific Grove, California. It consisted of seven sessions discussing global oil demand, vehicle automation, and sustainable freight.

Giuliano moderated a session on sustainable freight, which examined ways to improve energy efficiency and reduce pollution in freight logistics operations. She also served as a member of the conference's steering committee. Giuliano's participation is particularly noteworthy because the topic of freight tends to be overlooked in discussions

related to sustainability in transportation.

METRANS leadership was also able to meet with other member institutions of the National Center for Sustainable Transportation (NCST). NCST members met with the NCST Leadership Council, which is comprised of industry and public-sector stakeholders who provide critical feedback on NCST's research priorities and help to apply research insights to real world policy issues.

UC Davis is the lead university for NCST, and METRANS is a member of the NCST consortium. UC Davis is also a member of the Pacific Southwest Region (PSR) University Transportation Center.

METRANS OUTREACH

Dr. Laetitia Dablanc Presents at 2017 UCLA Arrowhead Symposium



Dr. Laetitia Dablanc

Laetitia Dablanc was a featured speaker at the UCLA Arrowhead Symposium 2017. Taking place on October 15-17 at the UCLA Conference Center in Lake Arrowhead, this year's symposium was titled Global Climate Change, Local Growing Pains. Dablanc's presentation looked at the land use and emissions impacts of consumer-driven logistics. Her presentation discussed old frameworks and the future of sustainable urban growth. Dablanc also introduced the theme of "mixed signals" that complicate effective climate action.

Dablanc is Director of Research at the French Institute of Science and Technology for Transport, Development and Networks (IFSTTAR). Dablanc's research focuses on freight transportation, freight and the environment, urban freight and logistics, rail freight, rail freight policies, and rail logistics sprawl. She received her Ph.D. in Transportation Planning from Ecole des Ponts-ParisTech and a Master's degree in City and Regional Planning from Cornell University. She was initially trained in policy analysis and economics at Sciences Po in Paris.

METRANS EDUCATION

METRANS Welcomes Postdoctoral Fellows Sanggyun Kang and Yanbo Zhao



Sanggyun Kang



Yanbo Zhao

METRANS Transportation Center awarded recent Ph.D. graduates Sanggyun Kang and Yanbo Zhao positions as Postdoctoral Research Associates.

Dr. Kang received his Ph.D. in Urban Planning and Development at the University of Southern California (USC) in August 2017, with Dr. Genevieve Giuliano serving as his advisor. With his field specialization in urban freight systems, Kang's research interest is in documenting sub-metropolitan spatial characteristics of warehousing and distribution centers and testing how changing spatial patterns may affect urban freight activity over time. Kang's main focus as a Postdoctoral Research Associate is to support a National Science Foundation project entitled, "Cyber Physical Regional Freight Transportation System," led by Petros Ioannou, Maged Dessouky, and Genevieve Giuliano. The main objective of the project is to develop theoretical foundations of optimization for real-time simulation models that achieve load balancing in complex networks.

Yanbo Zhao received his Ph.D. in Electrical-Engineering from USC in August 2017 with Petros Ioannou serving as his advisor. Dr. Zhao's research interest is in the intersection of intelligent control, artificial intelligence and nonlinear optimization, and their applications to intelligent transportation systems. His research topics include but are not limited to intelligent logistics and multimodal freight transport, traffic control with connected and autonomous vehicles, and pedestrian navigation under emergencies. Dr. Zhao will also be collaborating on the NSF research project.

METRANS RESEARCH

Dr. Thomas O'Brien Presents at Research Network Workshop in Santiago, Chile



Dr. Thomas O'Brien

METRANS Associate Director Thomas O'Brien presented on a range of MetroFreight Workforce Development Programs at a Volvo Research and Education Foundations (VREF) Research Network Workshop in Santiago, Chile on June 30, 2017. Dr. O'Brien gave an overview of MetroFreight, an international consortium of research centers led by METRANS whose mission is to "develop solutions for urban freight problems that are collaborative and integrative with larger sustainability goals."

O'Brien identified the critical need for transportation workforce development and presented information about a graduate multidisciplinary course in urban freight that can be offered within a variety of programs and across multiple university campuses. The course features three modules:

- Module 1, titled "Freight and the City," offers courses in Urban Planning, Urban Geography, Urban Economics, and Supply Chain Management;
- Module 2, titled "Issues and Challenges in City Logistics," consists of topics in Urban Distribution, Urban Logistics Stakeholders, Urban Logistics Facilities, and Congestion and Externalities; and

- Module 3, titled "City Logistics in Practice," offers courses in Mitigation Policies and Strategies, Data Sources and Collection, and Urban Freight Models, ending with various case studies and best practices.

Students who complete the course will be awarded a certificate of completion.

The Port of Long Beach Academy of Global Logistics (AGL) was also featured in this presentation. The AGL is a partnership between CITT, Cabrillo High School, and the Port of Long Beach to expose students to career pathways in the freight industry while also creating a talent pipeline for freight employers. AGL is a great example of a model career pathway that meets workforce development needs and aligns with the mission of MetroFreight.

O'Brien concluded his presentation by stressing a need to create a network of educators in urban freight. The MetroFreight team at METRANS will carry out next steps to further expand the curriculum database, update the freight course, work on a practitioner course targeted at transportation engineering and planning consultants, and create additional ways to incorporate urban freight into existing educational programs.

To learn more about MetroFreight go to <https://www.metrotrans.org/metrofreight>.

METRANS ASSOCIATES SPOTLIGHT

Nancy Voorhees Continues Family Legacy of Transportation Research

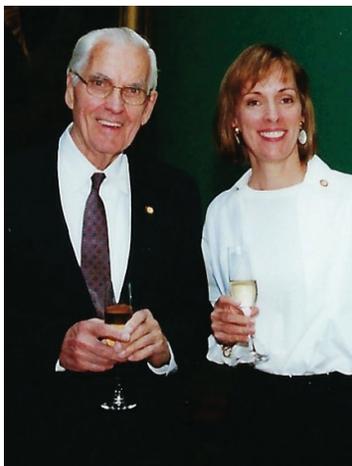
The late Alan M. Voorhees was an engineer, urban planner, and foundational figure in the development of the modern U.S. transportation system. He contributed to the rise of the domestic interstate highway system through his innovative engineering and urban planning methods. According to The National Academies Press, Voorhees "developed the gravity model, the first successful technique for forecasting urban travel patterns based on future land-development patterns." The New York Times called Voorhees an "entrepreneur," noting that he started his own engineering firm in 1961 and "helped design stations for the Washington Metro" and "subway systems in Brazil, Venezuela, and Hong Kong."

Voorhees was, without question, a trailblazer in the fields of research that METRANS conducts today. METRANS Associate Silver Partner Nancy Voorhees carries on the legacy of her father and her family foundation through the Alan M. and Nathalie P. Voorhees fund. She has a personal connection to transportation issues through her interest in small-scale real estate development. "Transportation issues are key in real estate – perhaps the degree to which I am interested in his field is a way of connecting

to my late father and to understand his profession and think about the issues he thought about," she said. "Dad loved ideas, progress, and productivity. He was a futurist."

NANCY VOORHEES

FOR THE ALAN M. AND NATHALIE P. VOORHEES FUND



Alan Voorhees and Nancy Voorhees

In regard to her involvement with METRANS, Voorhees describes Genevieve Giuliano, Director of METRANS, and Marlon Boarnet, Chair of the Department of Urban Planning and Spatial Analyses at USC, as two of her "heroes." Voorhees was initially introduced to METRANS through her son, Kevin Voorhees Carroll, and his involvement with the Center. Graduating with a bachelor's in Urban Sustainability Planning, Carroll was inspired to take the major after working with Marlon Boarnet and also assisting Giuliano with her research.

Nancy Voorhees' continued support of METRANS' research contributes to her late father's foresighted vision of urban goods movement. "Dad was one of the pioneers in developing and applying models of urban travel behavior for people. Now there is the additional challenge of understanding urban goods movements, which are changing and becoming more complex every day," she said.

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