RESEARCH THAT MOVES YOU
Northwestern University Transportation Center

Visit transportation.northwestern.edu to learn more.
The Transportation Center: Sustaining our Impact

Hani S. Mahmassani

Presentation to the BAC
May 16, 2019
WHAT IS NUTC?

PLATFORM

COLLABORATION
KNOWLEDGE CREATION
TRANSFORMATION
NUTC AS COLLABORATION PLATFORM

- **AGENCIES**
  - Local
  - State
  - Federal
  - International

- **INDUSTRY (BAC)**
  - Carriers
  - Shippers
  - 3PLs
  - Technology Providers

- **FACULTY RESEARCHERS**
  - Different Departments
  - International programs

- **STUDENTS**
  - Incoming programs
  - Interests

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**SERVICE/ADVICE**

**LEADERS/HUMAN CAPITAL**

**KNOWLEDGE**

**DISSEMINATION/OUTREACH ACTIVITIES**

**APPLICATIONS/TRANSFORMATION**
New NUTC STAFF

Goldie McCarty
Assistant Director of Research & Operations

Andrea Cehaic
Program Administrator
NUTC IMPACT?

Selected Faculty Recognition

Wei Chen
Elected to National Academy of Engineering (NAE)

Hani Mahmassani
Inaugural recipient of the *Martin Beckmann Award for Transformative Research in Transportation* (Transportation Research Board’s Network Modeling Committee)
Selected Faculty Recognition

**Marco Nie**
Stella Dafermos Best Paper Award  
(TRB Network Modeling Committee)

**Joseph Schofer**
Lifetime Achievement Award  
Council of University Transportation Centers

**Amanda Stathopoulos**
Faculty Early Career Development Program (CAREER)  
National Science Foundation (NSF)
New Faculty Affiliates

Ágnes Horvát
Assistant Professor of Communication Studies
School of Communication

Thomas O'Toole
Executive Director, Program for Data Analytics
Clinical Professor of Marketing
Kellogg School of Management

Hyejin Youn
Assistant Professor of Management & Organizations
Kellogg School of Management
NUTC IMPACT?

Direct Student Funding Through NUTC

![Bar chart showing funding categories over years]

- Travel/Events
- Fellowships
- Tuition/Stipend

<table>
<thead>
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<th>Year</th>
<th>Travel/Events</th>
<th>Fellowships</th>
<th>Tuition/Stipend</th>
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<td>FY18</td>
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WE PRODUCE LEADERS

Lama Al Hajj Hassan
Helene M. Overly Scholarship from Women in Transportation (WTS) Greater Chicago Area Chapter

Jason Soria
US DOT Dwight David Eisenhower Fellowship
"Exploring how users differentiate micro-transit from traditional modes"
NUTC IMPACT?

Selected Research Award

PhD candidate Lama Al Hajj Hassan, Hani Mahmassani, and Research Assistant Professor Ying Chen received the TRB Freight Planning & Logistics committee's Best Paper Award for:

A Reinforcement Learning Framework for Freight Demand Forecasting to Support Operational Planning Decisions

Initiated as part of a research collaboration with BAC Leadership member company Hub Group
NUTC IMPACT?

*New Education Initiative*

Professional Master of Science in Transportation, Supply Chain and Logistics

**Curriculum:** focus on
- Core principles, processes and industry knowledge
- Data, analytics and technology that is rapidly driving operational strategies in the transportation, supply chain and logistics industry
- Transportation Engineering and Management skills.

**Target student groups:**
- Recent bachelor degree graduates seeking entry into this field
- Experienced employees seeking advancement
- Career changers looking to transition into the industry.

**Steering Committee:** Reaching out to industry to join us to help define the elements and structure of this program to position it for long standing impact and success.
Executive Education Program

Freight Transportation and Logistics 3-Day Short Course

May 20-22, 2019

- Attendees from CSX, Rand McNally, State agencies, Uber and more

- Still room to add a few more

Northwestern
Transportation Center
BAC Contributions: FY08 – FY19

FY19 Goal: $625,000+ (not including 60th gifts)
NUTC IMPACT?
You Make it Possible

BAC Contributions: FY08 – FY19

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</table>
NUTC IMPACT?

You Make it Possible

Undergraduate Transportation Research Fellowship

• Funded through $100,000 gift from Greenbriar
• Funds Undergraduate Fellowships during summer
• Summer 2019 projects
  – Applications currently under review.
MAJOR STRATEGIC RESEARCH FOCUS: ACES– THE 4 DISRUPTORS

AUTONOMOUS

CONNECTED

ELECTRIC

SHARED

Shared Mobility– Multimodal platform
MaaS
NUTC IMPACT?

Selected Collaboration Activity

City Tech Collaborative Advanced Mobility Initiative

- **Goal:** create an innovation roadmap that will serve as a flexible, multi-year plan integrating policy and technology for advanced urban mobility
- **Lead partners:** Bosch, HERE Technologies and Microsoft
- **NUTC** is the lead academic partner
Selected Collaboration Activity

Uber Elevate, division of Uber Technologies Inc.

- **Vision**: deployment of an urban aerial ridesharing service in metropolitan regions using a new generation of small vertical take-off and landing aircraft.

- **Scope of engagement**: modeling and prediction of the demand for short-distance intra-metropolitan air travel, as well as overall impact of such services on metropolitan mobility.

- **Focus**: develop approaches using readily available data to assess potential latent demand for an aerial ridesharing service.
Selected Collaboration Activity

Experimental Aircraft Association (EAA)

- **Situation:** EAA’s annual, week-long AirVenture air show in Oshkosh, Wisconsin attracts over 600,000 attendees, along with thousands of aircraft, and a wide array of suppliers and delivery vehicles.
- **Scope of engagement:** conduct research into the management of large-scale events.
- **Focus:** focus on event access logistics operations and onsite crowd movement, and develop methods to improve and optimize operational efficiency, resulting in an enhanced *user experience* for attendees and exhibitors.
BAC: New Membership

2 new members

Sustaining
U.S. Bank

Individual
Mark Fornasiero
(Clarendon Group)
BAC: Membership by Category

- Air: 12.5%
- Associations: 6.8%
- Banking / Finance: 12.5%
- Logistics: 14.8%
- Maritime: 5.7%
- Professional: 11.4%
- Other: 1.1%
- Rail: 14.8%
- Shippers: 8.0%
- Technology: 6.8%
- Trucking/Intermodal: 5.7%
Selected Research Initiatives

US DOT Competition: Two National Centers

1. CONGESTION RESEARCH
   Congestion Relief

2. INFRASTRUCTURE RESEARCH
   Improving Durability and Extending Life of Transportation Infrastructure

Still Waiting! Anticipated decision, early June
Selected Research Initiatives

US DOT Automated Driving System (ADS) Demonstration Grants

Partners:

• University of Illinois at Urbana-Champaign (lead)
• Northwestern University
• University of Illinois at Chicago
• University of Wisconsin-Madison
• Georgia Tech University

Team Focus areas:

• Enhanced autonomy of retrofitted commercial vehicles as a single vehicle and part of platooning operations
• Interoperable fleets of first and last mile delivery vehicles to develop hybrid public transportation operations
• Automated shuttle technology serving for mobility needs of transportation-challenged populations
Joint Research Initiative on Autonomous Vehicles
Smart Transportation Infrastructure Initiative (STII)

- Partners: NUTC, University of Illinois-Urbana Champaign (UIUC) and University of Illinois-Chicago (UIC)
- City of Rantoul donated land + UIUC contribution
- Industry partnerships underway; major focus on truck automation and logistics operations
- Illinois DOT major partner; incoming IDOT secretary major supporter
- Business plan developed
- Planning and preliminary design documents under preparation
Lori Heissler
*Chief Operating Officer, Wells Fargo Rail*

Eric Marchetto
*Executive VP & Chief Commercial Officer, Trinity Industries Inc.*

James R. Zubik
*Vice President, Finance & Administration, Anacostia Rail Holdings*

Did we miss anyone visiting for the first time?
BAC: New Members, New Companies

Satish Chandra
Director – Growth Office, Corporate Strategy, Cummins Inc.

Mark Fornasiero
Managing Partner, Clarendon Group

Michael Reymann
Senior VP & Manager, National Transportation Banking, US Bank

Did we miss anyone visiting for the first time?
Guests Here Today

**BAC Companies:**
- Ken Louise, TranzAct Technologies
- Marcus Martinez, FedEx Express
- Brian Meents, Hub Group
- Archak Mittal, Ford Motor Company

**Other Guests:**
- Krishna Jha, Optym
- Jim Monkmeyer, DHL Supply Chain
- Peter Vanderzee, Lifespan Technologies
- Prof. Dirk Mattfield, TU Braunschweig

Did we miss anyone?