

The Transportation Center

RESEARCH
THAT MOVES YOU

Hani S. Mahmassani

Presentation to the BAC
May 3, 2018



Northwestern University
Transportation Center

BAC
2018
SPRING



WELCOME
& THANK YOU
FOR BEING HERE!

Business Advisory Council
SPRING MEETING

THURSDAY, MAY 3, 2018 [8:00 AM]

NORTHWESTERN UNIVERSITY TRANSPORTATION CENTER
CHAMBERS HALL 600 FOSTER, EVANSTON, ILLINOIS 60208

Strategic Vision: A Refresher

- *Cutting-edge research that matters* on a global scale
- *Premier educational program* in transportation systems
- Academic partner for *novel, high-impact collaborative* research
- Advance state of practice industry applications through *application-driven research* and *fundamental advances*



Progress Highlights:

BAC Membership (since last meeting)

- **3** new companies (**5** new members)

Funded Research Activity (TC affiliates)

- Active: **26** projects **\$10.6 M, 11** faculty

Students

- **37** students (**24** PhD) in Transportation Systems (TRN) graduate program
 - **4** supported via dissertation year fellowships
- **19** T&L minor students (6 graduating in 2018)
- Strong recruiting year for 2018-2019
 - 6 of 7 students accepted offer (PhD)



BAC: Update on Membership

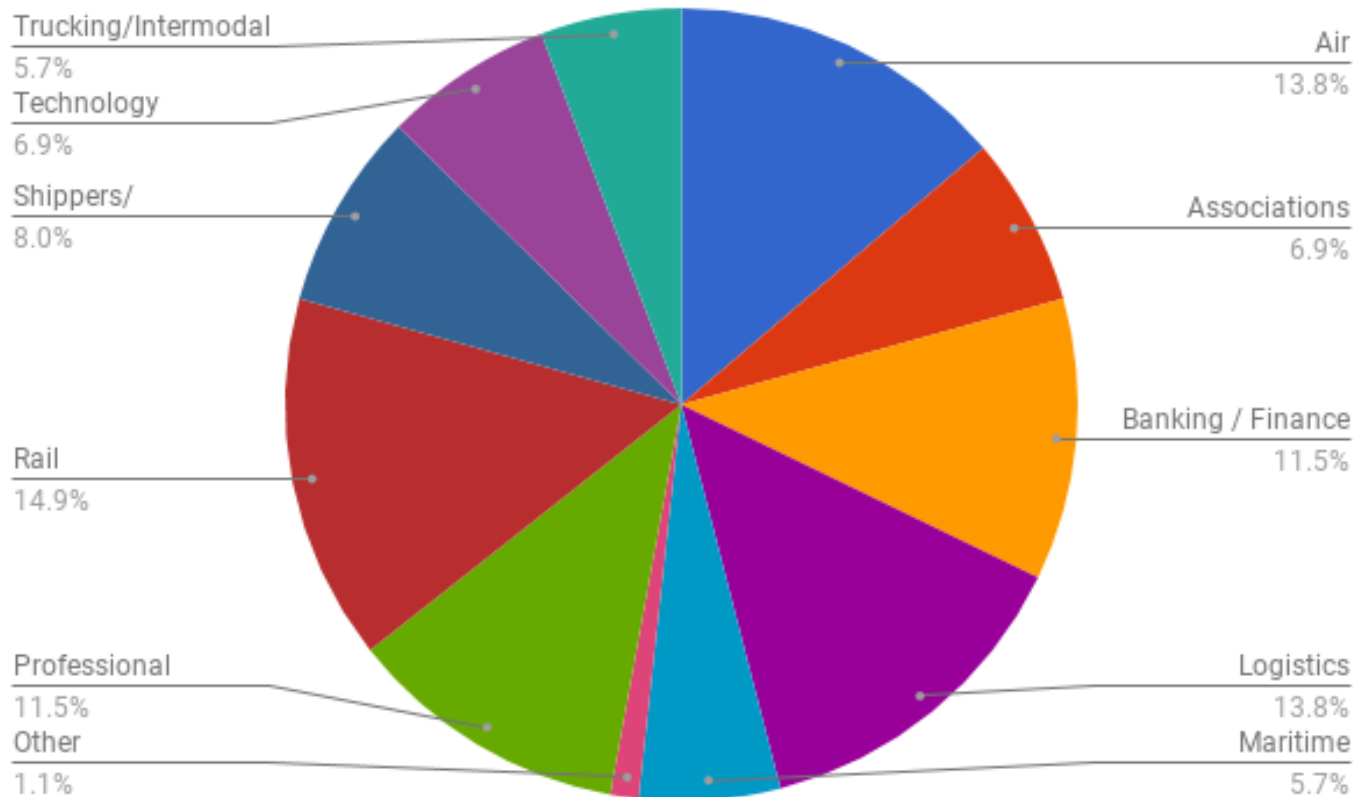
- 2017-2018 good year viz. recruitment, retention of companies, events, and engagement
- **Actively seeking more opportunities to engage individual companies and/or consortia in research support and collaboration**
- Active membership committee, several new prospects in the pipeline





BAC: Update on Membership

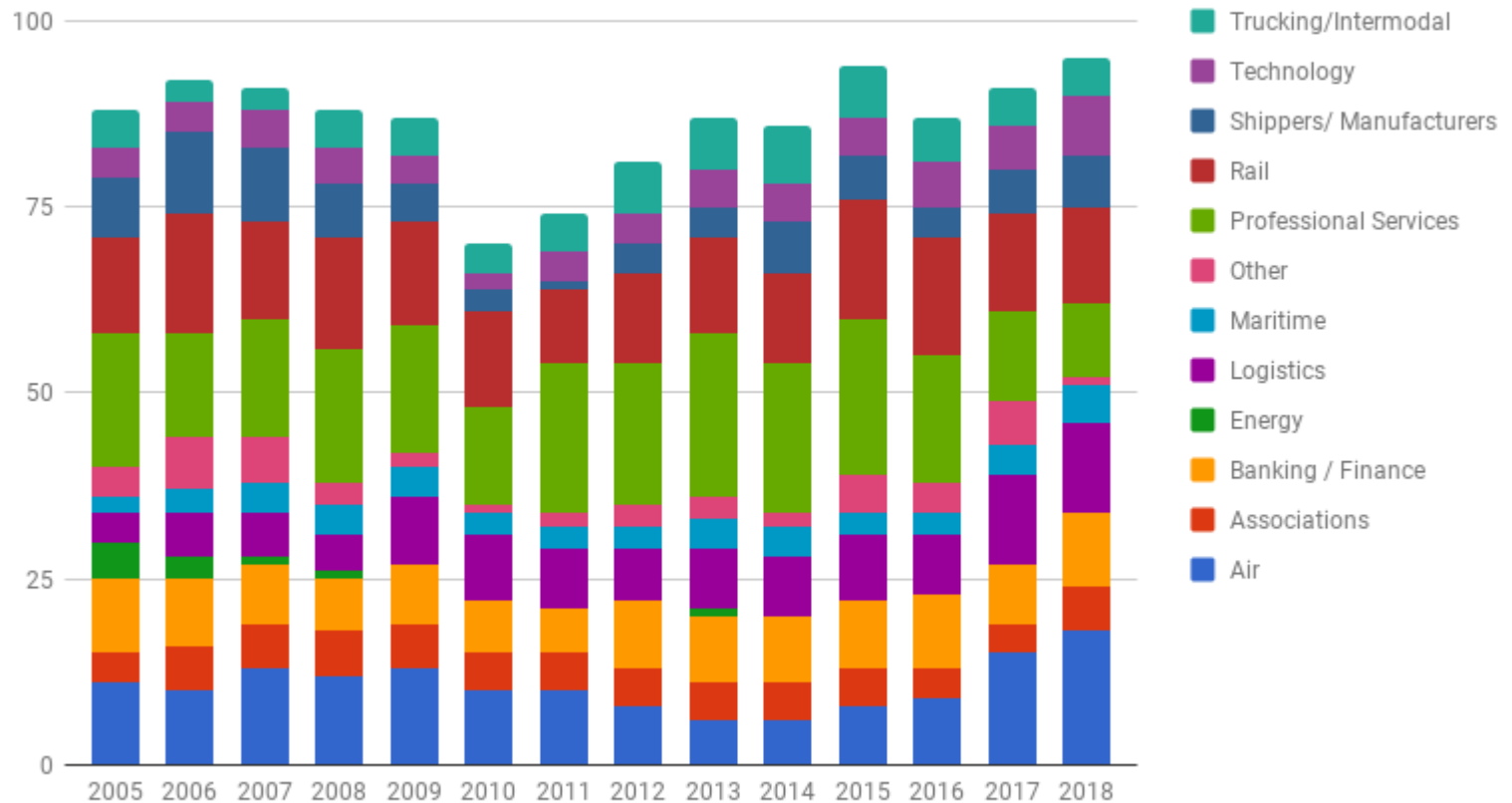
Companies by Category, 2108





BAC: Update on Membership

BAC Member Count (Individuals) by Industry Sector



BAC: New Membership Leadership

Maven, a GM company



Sustaining

AGI-Alliance Ground
International



Association

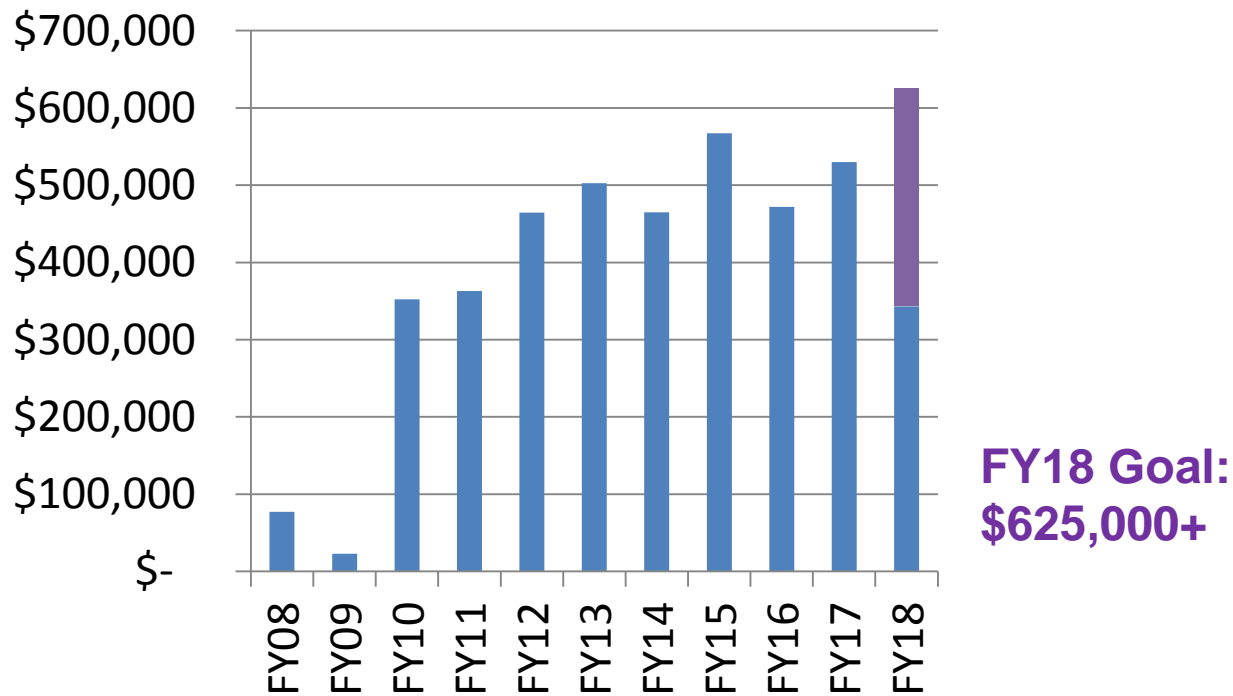
American Trucking Association



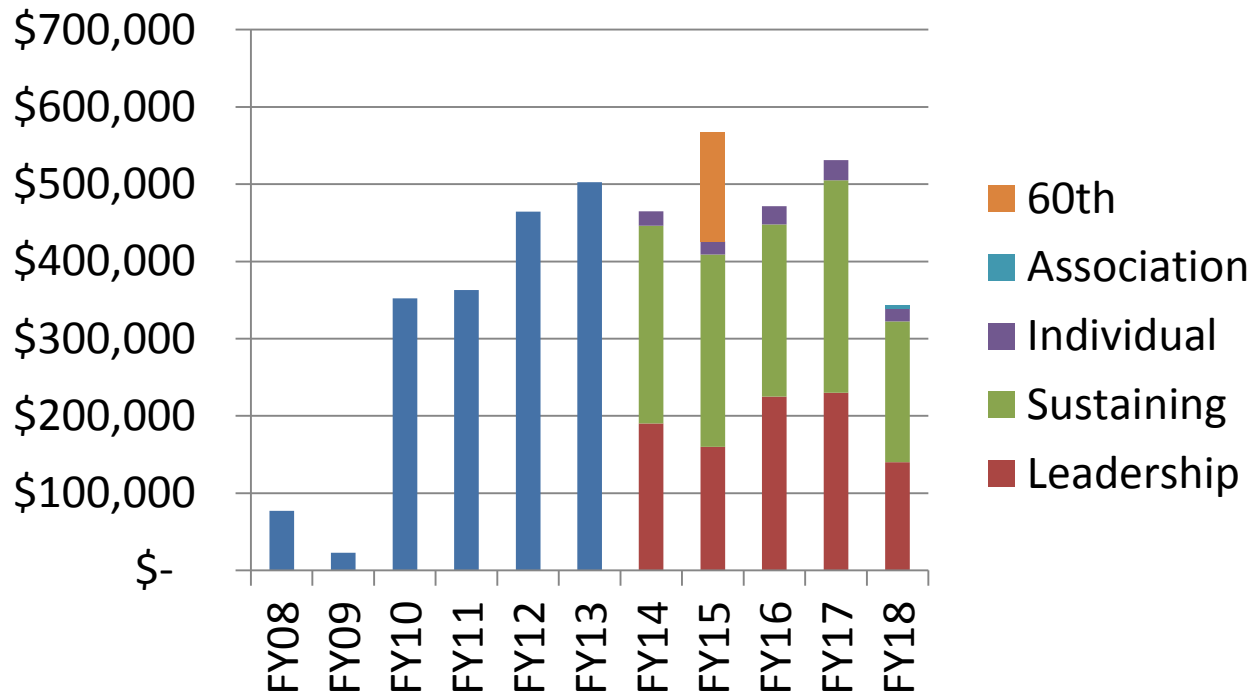
** 2 other companies joined and then asked to wait 6 months

** strong pipeline of potential new members

BAC Contributions: FY08 – FY18



BAC Contributions: FY08 – FY18





Faculty Awards / Honors (I)



Zdenek Bazant

2017 ASME Medal



Wei Chen

2017 Ver Steeg Faculty Award

The Graduate School, Northwestern

Faculty Awards / Honors (II)



Marco Nie

2018 Stella Dafermos Best Paper Award

TRB Transportation Network Modeling
Committee



Amanda Stathopoulos

**Recognition for paper, “Performance Analysis of
Crowd-shipping in Urban and Suburban Areas”**

TRB Urban Freight Transportation Committee

**Congratulations Amanda!
Welcome Cassandra!**

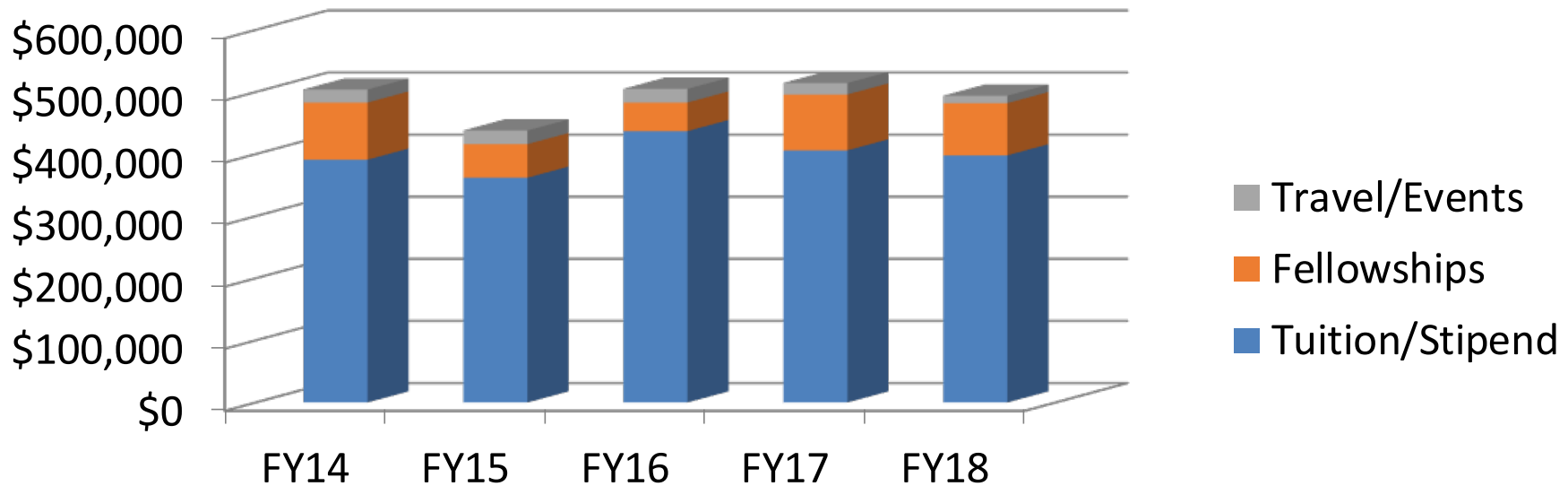


Students: Our Core Mission (I)

- TC adds *value to student experience* through industry exposure, seminars by authorities in the field, travel funds for conferences, fellowship stipends— essential differentiator for recruiting top talent
- Many opportunities for *undergraduates* interested in transportation; increasing engagement in research, *internship* placement with *BAC companies*
- *Industry support is critical* to our mission and to making a Northwestern Education in Transportation the unique experience it is.

Students: Our Core Mission (II)

Direct Student Funding Through NUTC



Students: Awards



Michael Hyland

**Dwight David Eisenhower Transportation
Fellowship (*US DOT*)**



Helen Pinto

**International Road Federation 2018 Road
Scholar**

President of IRF Fellows Class of 2018



Students:

Transportation & Logistics Minor Program

- 6 students graduating in 2018
 - **Benjamin Connelly** - Industrial Engineering
 - **Daniel Diaz** - Industrial Engineering
 - **Bryce Halloran** – Economics → *Deloitte Consulting*
 - **Benjamin Kullavanijaya** - Economics with a certificate in energy and sustainability → *Via Transportation*
 - **Ben Powell** - Social Policy
 - **Keaton Tatoes** – Economics

Greenbriar Equity Group

Undergraduate Transportation Research Fellowship

- Launched for Summer 2018 research internships
- Funds 4 Fellowships each year
- Representing multiple undergraduate majors:
 - Electrical Engineering & Computer Science
 - Industrial Engineering & Management Science
 - Civil & Environmental Engineering
 - Political Science



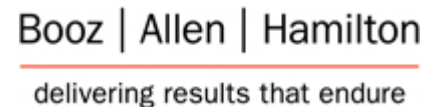
Research (I)

Industry Research

- Allstate
- DiDi Chuxing
- Ford
- Google
- Huochebang (Truck Alliance)
- Roadie

Industry Teaming

- Booz Allen Hamilton
- Kimley - Horn
- Leidos, Inc.
- Resource Systems Group, Inc.
- Various small businesses



Research (II)

Public Agencies / Federal Research

- **Army Research Office**
- **Chicagoland Metropolitan Agency for Planning**
- **Federal Highway Administration**
- **NASA**
- **National Science Foundation**





Research (III)

Freight and Supply Chain Performance Measurement in State Freight Plans

- Review and summarize the mandate for state freight plans in the FAST Act legislation
- Report and interpret how states treat freight performance and particularly supply chain performance.
 - Identify general patterns, best practices in freight performance measurement, and important gaps in methods and
- Output: written report, potentially to:
 - Presentation at TRB conference on freight Fluidity Measures, Sept. 5-6, 2018
 - Presentation or report distributed to NUTC BAC fall, 2018
 - Presentation at TRB Annual Meeting, January 2019 – if paper accepted
- *Led by Professor **Joseph Schofer** with **Dr. Lama Bou-Mjahed**, named as the **Schneider Post-Doctoral Fellow***

Research (IV)

Autonomous and Connected Vehicle Systems

1. Two ongoing FHWA projects

Twinned with European Community project with similar scope



2. New international collaboration on CAV impacts

1. Led by Technical University of Munich (Global Fund Initiatives)
2. In partnership with NUTC and UC-Santa Barbara.

3. Illinois Autonomous Vehicle Association

1. Several ongoing opportunities under discussion

Research (V)

Autonomous and Connected Vehicle Systems

Joint Research Initiative on Autonomous Vehicles (AVs)

- Partners: NUTC, University of Illinois-Urbana Champaign (UIUC) and University of Illinois-Chicago (UIC)
- Land for AV testing and proving ground facilities secured by UIUC near Urbana-Champaign for build out
- Freight and passenger
- Resource for industry to test and demonstrate technologies



Research (V)
Autonomous and Connected Vehicle Systems
Joint Research Initiative on Autonomous Vehicles (AVs)

Illinois Center for Transportation
University of Illinois at Urbana-Champaign



Land Acquisition Allocated to I-ACT



Research (V)

Autonomous and Connected Vehicle Systems

Joint Research Initiative on Autonomous Vehicles (AVs)

- Examples of proposed testing facilities



Illinois Center for Transportation
University of Illinois at Urbana-Champaign

Smart Freight Loop





Selected Outreach Activities (I)

37th Annual Patterson Transportation Lecture

Dennis Muilenburg

Chairman & CEO

The Boeing Company



"The sky's no limit: Boeing and the future of space exploration"

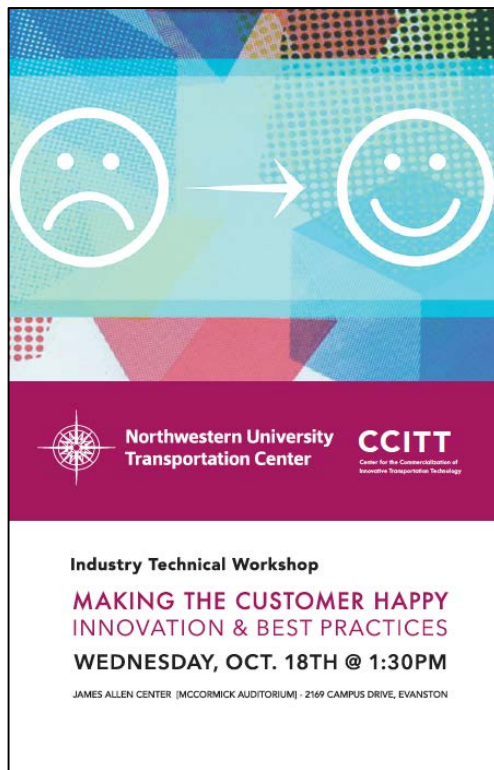
Selected Outreach Activities (II)

- **Implementing a Freight Fluidity Performance Measurement System Workshop**

- Transportation Research Board
- September 5-6, 2018
- Professor **Joseph Schofer**, chair of the organizing committee
- BAC member **John Larkin**, speaker
 - Panel Five: Science Fiction to Engineering Facts – A Visionary Panel
 - This panel will discuss how the future could bring big changes in manufacturing, purchasing, distribution, and freight performance needs and management.



Selected Outreach Activities (III)

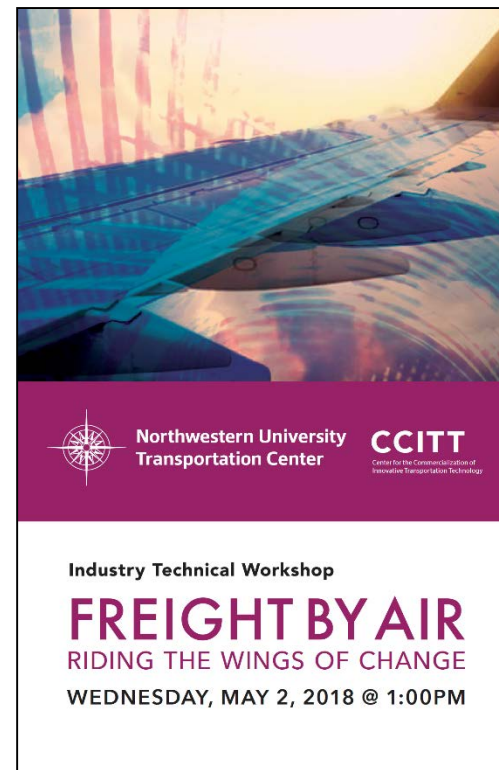


Northwestern University
Transportation Center

CCITT
Center for the Commercialization of
Innovative Transportation Technology

Industry Technical Workshop
MAKING THE CUSTOMER HAPPY
INNOVATION & BEST PRACTICES
WEDNESDAY, OCT. 18TH @ 1:30PM
JAMES ALLEN CENTER [MCCORMICK AUDITORIUM] - 2169 CAMPUS DRIVE, EVANSTON

Fall 2017



Northwestern University
Transportation Center

CCITT
Center for the Commercialization of
Innovative Transportation Technology

Industry Technical Workshop
FREIGHT BY AIR
RIDING THE WINGS OF CHANGE
WEDNESDAY, MAY 2, 2018 @ 1:00PM

Spring 2018

Impacts of NUTC 60th Fundraising

- Schneider Family Graduate Endowed Fellowship Program
- Ruan Family Transportation Fund
- Greenbriar Equity Group Undergraduate Transportation Research Fellowship
- Diana Marek Student Experience Fund

SCHNEIDER

RUAN

GREENBRIAR
EQUITY GROUP LLC





Closing Thoughts

- *NUTC remains focused on the future*
 - Autonomous and connected vehicles, trucks
 - Innovation in logistics and supply chain operations
 - Last mile supply chain logistics
 - Internet of Things and smart mobility in cities
- ***NEXT BAC MEETING***
 - November 7-8, 2018
 - Featuring BAC member **Brad Keywell, CEO, Uptake Technologies**, as after dinner speaker



Thank you!

BAC: New Members Here Today

Leadership

Paul Pebbles

*Chief Technology Officer, Maven, a
General Motors company*





BAC: New Members Here Today

Sustaining

Jared Azcuy

*Chief Operating Officer, AGI-Alliance
Ground International*

Guests Here Today (I)

- **James Cade**, Ruan Transportation
- **Craig Fuller**, FreightWaves
- **Jordan Graft**, Triumph Business Capital
- **Don Hillebrand**, Argonne National Lab
- **Congressman Dan Lipinski**
- **David Pennington**, BMO Capital Markets
- **Jo Strang**, American Short Line and Regional Railroad Association
- **Noam Alon**, United Airlines
- **Brennan Donnelly**, Uptake
- **Randy Kowalski**, Illinois DCEO
- **Geoff Murray**, Oliver Wyman