The Transportation Center

RESEARCH
THAT MOVES YOU

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Presentation to the BAC
May 3, 2018
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

- Trucking/Intermodal
- Technology
- Shippers/Manufacturers
- Rail
- Professional Services
- Other
- Maritime
- Logistics
- Energy
- Banking/Finance
- Associations
- Air

Yearly Counts from 2005 to 2018
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

FY18 Goal: $625,000+
BAC Contributions: FY08 – FY18

- FY08
- FY09
- FY10
- FY11
- FY12
- FY13
- FY14
- FY15
- FY16
- FY17
- FY18

$100,000
$200,000
$300,000
$400,000
$500,000
$600,000
$700,000

60th
Association
Individual
Sustaining
Leadership
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

<table>
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<tr>
<th>Year</th>
<th>Travel/Events</th>
<th>Fellowships</th>
<th>Tuition/Stipend</th>
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<tr>
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<td>FY18</td>
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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 Tatooles – 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

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)

Land Acquisition Allocated to I-ACT

257 Acres

“Where Excellence and Transportation Meet”
Research (V)

Autonomous and Connected Vehicle Systems

Joint Research Initiative on Autonomous Vehicles (AVs)

- Examples of proposed testing facilities
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)

Fall 2017

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
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 DC EO
- Geoff Murray, Oliver Wyman