

Program Progress Performance Report for University Transportation Centers

U.S. Department of Transportation
Research and Innovative Technology Administration
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Project Title: Southeastern Transportation, Research, Innovation,
Development & Education Center (STRIDE)

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Signature of Submitting Official: _____
Lily Elefteriadou, Ph.D.

1. ACCOMPLISHMENTS (What was done? What was learned?)

a. *What are the major goals of the program?*

- To develop novel strategies for reducing congestion in the southeast and nationally by considering new technologies in vehicles, telecommunications, shared autonomy in transportation, driver/traveler behavior and financial constraints. To do this, we will focus on five research thrusts: Technology, Management, Data, Design and Users.
- To implement the research products developed from these strategies and to make them available to the practitioner community. The STRIDE Center will continue to work closely with state DOTs in the region and other entities via the Center's technology transfer, education and workforce development activities to disseminate the results of our work and facilitate implementation.

b. *What was accomplished during these goals?*

- All of the 10 Year 1 projects outlined in the STRIDE proposal are currently underway, and we have begun to receive progress reports on most of these. A list of the Year 1 projects is provided at <https://stride.ce.ufl.edu/2017/03/2017-projects/>. The website includes the abstract and the UTC Project Information Sheet for each project.
- Year 1 projects have been entered into the Research in Progress database. We are closely monitoring the progress of the Year 1 projects.
- A call for proposals was issued for the Year 2 project cycle on February 2, 2018, with pre-proposals due on March 9, 2018. A total of 24 pre-proposals were submitted and were sent out for peer-review between March 23, 2018 and March 26, 2018. We are in the process of gathering the results of the reviews and scheduling a meeting with the STRIDE Center's Internal Steering Committee to discuss the results and select those pre-proposals that will be invited to proceed to the full proposal stage. It is expected that the full proposals will be due by early June 2018. Full proposals will go through another round of peer reviews and final decisions will be made by the June 25, 2018. Projects are expected to begin by early to mid-July 2018.
- The UFTI (University of Florida Transportation Institute - the home institute of STRIDE) has been working with the Florida Department of Transportation (FDOT) and the City of Gainesville to develop a testbed for advanced transportation technologies (I-STREET: <https://www.transportation.institute.ufl.edu/research-2/istreet-about-us/>) on the UF campus and the surrounding area. This testbed will develop and implement advanced transportation technologies (e.g., connected and autonomous vehicles, smart devices, and sensors) developed by STRIDE partners, or in concert with industry or national leaders, and will create a model nationally and internationally for operationalizing advanced technologies to enhance transportation. Several infrastructure-related projects are underway under this initiative: the Gainesville Autonomous Transit Shuttle, the I-75 FRAME project, and the Gainesville SPaT Trapezium project. Several other projects are research-focused and serve as matching projects for STRIDE.

c. *What opportunities for training and professional development has the program provided?*

- The [2017 UTC Conference for the Southeastern Region](#) was hosted at the University of Florida on November 16-17, 2017. More than 200 students, faculty and other transportation professionals attended the event, which was hosted and sponsored by STRIDE and the University of Florida Transportation Institute (UFTI) and co-sponsored by

other universities and entities in the Southeastern U.S. including North Carolina A&T State University, the University of North Carolina Highway Safety Center, The Citadel, Georgia Institute of Technology, Florida International University/Accelerated Bridge Construction UTC, Florida State University/Florida A&T, the Freight Mobility Research Institute at Florida Atlantic University, Jacobs Engineering, Enforcement Engineering, the Tampa Hillsborough County Expressway Authority, and the UF Office of Research. The conference included an Autonomous and Connected Vehicle demonstration, keynote addresses given by Dr. Kevin Womack, Director of the USDOT/OST-R and Mr. Tom Byron, Assistant Secretary, FDOT. The conference included a state DOT panel featuring representatives from FDOT, Georgia DOT, North Carolina DOT, Alabama DOT, and South Carolina DOT. Also, ITE (Institute of Transportation Engineers) and WTS (Women in Transportation Seminar) student chapters from across the Southeastern U.S. met for a “Discover Your Leadership Style” session, a prequel to the student-run ITE Student Leadership Summit hosted at UF in February 2018.

- Under the umbrella of the UFTI, the STRIDE Center co-hosted Mr. Greg Winfree, agency director, Texas A&M Transportation Institute (TTI) on November 30, 2017. Mr. Winfree spoke on “Recalculating...Connected Autonomous Vehicles? It’s Time for an Intellectual Reset”. The seminar was part of the Distinguished Seminar Speakers Series and was live webcast and recorded at: <https://youtu.be/b7iqT32klW8>.
- Another Distinguished Seminar Speaker was hosted on April 12, 2018. Dr. Elise Miller-Hooks, from the Department of Civil, Environmental, and Infrastructure Engineering at George Mason University was invited to speak on "Multi-Hazard Resilience Quantification in Transportation Systems and the Societal Functions They Support." The seminar was live webcast and recorded at: <https://ufedge.video.ufl.edu/Mediasite/Play/b2dd168c571d4151af9ac2ab7b49fcef1d>.
- The STRIDE Center also co-sponsored the ITE Student Leadership Summit hosted by the UF Gator ITE student chapter on February 9-11, 2018, which was held in conjunction with the Florida Section ITE (FSITE) Winter Workshop. Students from universities within the Southeastern U.S. were invited to attend. Dr. Lily Elefteriadou spoke about I-STREET during the FSITE workshop and was a speaker during one of the plenary sessions related to the Student Leadership Summit.
- The WTS Symposium on Smart Cities was held on April 4, 2018 at the University of Florida. The event was hosted by the WTS Florida Gator Student Chapter and co-sponsored by the STRIDE Center. This event was attended by more than 50 representatives of public and private agencies, as well as faculty and students, and focused on aspects of a connected city and campus.
- The STRIDE Center is sponsoring a Transportation Engineering Workshop on May 22-23, 2018 at Auburn University. The two-day workshop and conference will provide an opportunity for transportation engineering faculty to work together to learn of best practices in engineering education, develop activities for their classes, and create or further develop their networks with other teaching faculty.

d. How have these results been disseminated?

- The STRIDE Center uses Constant Contact, which is an email marketing platform, to disseminate information related to events, various activities, announcements, seminars

and conferences. We will also use this platform to disseminate information related to completed research reports (no projects have been completed to date).

- Information is also posted on the STRIDE website (<https://stride.ce.ufl.edu/>), and on our Facebook and Twitter pages. The STRIDE Center's activities are also publicized through the UFTI's Facebook and Twitter platforms as well for additional news coverage.
- A Facebook and Twitter campaign was launched to showcase the 10 Year 1 STRIDE projects, and included a spotlight on the lead PI of each project and the student(s) working on each project. To see the spotlights on FB visit: <https://www.facebook.com/southeasterntransportationcenter>. To see spotlights on Twitter, visit: https://twitter.com/STRIDE_UTC.
- During the 2018 UTC Conference for the Southeastern Region hosted at UF, several research projects by students, faculty and staff were showcased. This was a great opportunity to see a snapshot of the type of research being conducted in the Southeastern U.S. There were 54 presentations and 65 posters grouped in the areas of Infrastructure, Operations, Safety, Aviation and Energy, Multimodal, Safety and Traveler Issues, Transit, Planning, Infrastructure and Design, Freight, and Transit and Energy Issues.
- The UTC Conference's Autonomous and Connected Vehicle demonstration attracted local media (<http://www.wcjb.com/content/news/UF-Hosts-Southeastern-Transportation-Conference-458073723.html>).

e. *What do you plan to do during the next reporting period to accomplish the goals and objectives?*

- All Year 1 projects will continue to be active.
- Year 2 STRIDE projects will be selected and initiated.
- Several K-12 activities and events across the STRIDE Consortium will be organized.
- STRIDE will help co-organize the next UTC Conference for the Southeast, which will be hosted at Clemson University. The STRIDE Center serves on the planning committee and will be one of the co-sponsors of this event.
- STRIDE will continue to host transportation seminars for students, faculty and staff
- A distinguished speaker will be invited to visit and present a seminar or a workshop sometime during the Fall 2018 semester.

Dissemination of completed research, education and technology transfer activities at the STRIDE Center will continue, including Facebook and Twitter campaigns.

2. PRODUCTS (What has the program produced?)

- a) ***Publications, conference papers, and presentations*** – Nothing to report yet as Year 1 projects are currently underway and Year 2 projects are in the process of being selected.
- b) ***Website(s) or other Internet site(s)*** –
- The STRIDE Center's website: (<https://stride.ce.ufl.edu/>)
 - Facebook (<https://www.facebook.com/southeasterntransportationcenter>)
 - Twitter page (https://twitter.com/STRIDE_UTC)
- c) ***Technologies or techniques*** – Nothing to report
- d) ***Inventions, patent applications and/or licenses*** - Nothing to report yet

- e) **Other products, such as data or databases, physical collections, audio or video products, software or NetWare, models, educational aids or curricula, instruments, or equipment –**
Nothing to report yet.

3. Participants & Collaborating Organizations (Who has been involved?)

Below are the organizations that the STRIDE Center and its consortium members already have a relationship with. Most state DOTs provide cost-share while other entities provide a variety of contributions (in-kind, facilities, collaborative research, personnel exchanges).

Organization Name	Location of Organization	Contribution Type
Alabama Department of Transportation	Montgomery, Ala.	Cost-share
Florida Department of Transportation	Tallahassee, Fla.	Cost-share
Georgia Department of Transportation	Forrest Park, Ga.	Cost-share
North Carolina Department of Transportation	Raleigh, NC	Cost-share
City of Gainesville	Gainesville, Fla.	Various
Jacksonville MPO	Jacksonville, Fla.	Various
LYNX Transit Agency	Orlando, Fla.	Various
Orlando-Orange County Expressway Authority	Orlando, Fla.	Various
Florida Highway Patrol	Florida	Various
Kittelson & Associates	Various locations in the U.S.	Various
Cambridge Systematics	Various locations in the U.S.	Various
FDOT Districts 2, 4, 5, & 6	Lake City, Ft. Lauderdale, Deland and Miami	Various
Atlanta Regional Commission		Various
Cobb County	Georgia	Various
City of Atlanta	Georgia	Various
Community Improvement Districts (Buckhead, Cobb, Perimeter)	Georgia	Various
Atlanta Chamber of Commerce	Atlanta, Ga.	Various
Oak Ridge National Labs	Tennessee	Various
U.S Army Corp of Engineering	Vicksburg, Miss.	Various
Regional Planning Commission of Greater Birmingham	Birmingham, Ala.	Various
City of Birmingham	Birmingham, Ala.	Various
IBM (Smarter Cities Challenge)		Grant i-STREET

The Triangle Regional Model Service Bureau	North Carolina	Various
Durham-Chapel Hill Carrboro MPO	North Carolina	Various
Jacobs Engineering	Boynton Beach, Fla.	UTC Conference Sponsorship
Enforcement Engineering, Inc.	Jacksonville, Fla.	UTC Conference Sponsorship
Clemson University	Clemson, South Carolina	UTC Conference Sponsorship
Georgia Institute of Technology	Atlanta, Ga.	UTC Conference Sponsorship
North Carolina A&T State University	Greensboro, North Carolina	UTC Conference Sponsorship
ABC-UTC Florida International University	Miami, Fla.	UTC Conference Sponsorship
Transportation Research Board	Washington, D.C.	UTC Conference Sponsorship
UNC Highway Safety Research Center	Chapel Hill, North Carolina	UTC Conference Sponsorship
Freight Mobility Research Institute/Florida Atlantic University	Boca Raton, Fla.	UTC Conference Sponsorship
Florida State University/Florida A&M	Tallahassee, Fla.	UTC Conference Sponsorship
University of South Florida/Center for Urban Transportation Research	Tampa, Fla.	UTC Conference Sponsorship
Southeastern Transportation Center/University of Tennessee	Knoxville, Tenn.	UTC Conference Sponsorship

4. Impact (What is the impact of the program? How has it contributed to transportation education, research and technology transfer?)

- a) **Development of the principal disciplines of the project** – Nothing to report yet because Year 1 projects are currently underway and Year 2 projects are in the process of being selected. Researchers affiliated with the STRIDE Center have previously collaborated across the southeastern U.S. on various projects and activities and have established strong relationships with various public and private agencies, which will facilitate dissemination and implementation of research results.
- b) **Other disciplines** - Our 10 current projects for Year 1 involve civil engineers, computer scientists, and urban planners. It is expected that STRIDE will continue to engage in interdisciplinary activities throughout the life of the grant.

- c) **Development of human resources** - We expect to be engaged in several K-12 activities during the next reporting period and provide student support.
- d) **Physical, institutional, and information resources at the university and/or other partner institution** - The UFTI, which is home to the STRIDE Center, has been working with the Florida Department of Transportation (FDOT) and the City of Gainesville to develop a testbed for advanced transportation technologies on the UF campus and the surrounding area. This testbed will develop and implement advanced transportation technologies developed by STRIDE partners. See page 2 (Section 1) for more information.
- e) **Technology transfer (include transfer of results to entities in government or industry, adoption of new practices, or instances where research has led to the initiation of a start-up company)** - We expect to host a series of webinars, seminars and workshops related to completed research, education and technology transfer projects.
- f) **Society beyond science and technology** - Nothing to report yet. We expect that the STRIDE Center's Year 1 projects will generate various tools and methods, which will be made available to transportation practitioners throughout the U.S. We also expect to continue to forge strong relationships in academia and the public and private sectors through the UTC Conference for the Southeast, engagement with elementary and high schools across the U.S. through the Center's K-12 programs and more.

5. Changes/Problems

- **Changes in approach and reasons for change** – Nothing to report
- **Actual or anticipated problems or delays and action or plans to resolve them** - Nothing to report
- **Changes that have a significant impact on expenditures** - Nothing to report.
- **Significant changes in use or care of human subjects, vertebrate animals and/or biohazards** - Nothing to report
- **Change of primary performance site location from that originally proposed** - Nothing to report

6. Special Reporting Requirements

- Nothing to report

STRIDE Year 1 List of Projects:

Congestion Management in the Era of Decentralized Traveler Information

Lead PI: Dr. Mike Hunter, Georgia Institute of Technology

Team: Dr. Mohammed Hadi, Florida International University; Dr. A. Guin, Georgia Institute of Technology; Dr. Billy Williams, North Carolina State University; Dr. Feng Wang, Jackson State University

Technology Influence on Travel Demand & Behavior

Lead PI: Dr. Virginia Sisiopiku, University of Alabama at Birmingham

Team: Dr. Noreen McDonald, University of North Carolina at Chapel Hill; Dr. Ruth Steiner, University of Florida; Dr. Mohammed Hadi, Florida International University

Performance Measurement & Management Using Connected & Automated Vehicle Data

Lead PI: Dr. Mohammed Hadi, Florida International University; Dr. Nagui Roupail, North Carolina State University; Dr. Virginia Sisiopiku, University of Alabama at Birmingham; Dr. Siva Srinivasan, University of Florida; Dr. Sanjay Ranka, University of Florida

Traffic Management with Autonomous and Connected Vehicles

Lead PI: Dr. Lily Elefteriadou, University of Florida

Team: Dr. Mike Hunter, Georgia Institute of Technology; Dr. C. White, Georgia Institute of Technology; Dr. Sanjay Ranka, University of Florida; Dr. Carl Crane, University of Florida

Predicting Congestion: The Challenge of Shifting Travel Behavior on Estimating Trip Generation

Lead PI: Dr. Ruth Steiner, University of Florida

Team: Dr. Noreen McDonald, University of North Carolina at Chapel Hill

Integrated Implementation of Innovative Designs

Lead PI: Dr. Nagui Roupail, North Carolina State University

Team: Dr. Chris Cunningham, North Carolina State University; Dr. Steven Click, Tennessee Technological University; Dr. Mike Hunter, Georgia Institute of Technology; and Dr. Jeff Davis, The Citadel

Transit in the Era of Shared Mobility

Lead PI: Dr. Kari Watkins, Georgia Institute of Technology

Team: Dr. Billy Williams, North Carolina State University; Dr. Ruth Steiner, University of Florida; Dr. Noreen McDonald, University of North Carolina at Chapel Hill

Work Zone Planning, Design, & Operations

Lead PI: Dr. Rod Turochy, Auburn University

Team: Dr. Virginia Sisiopiku, University of Alabama at Birmingham; Dr. Billy Williams, North Carolina State University; Dr. James Tsai, Georgia Institute of Technology

Strategies for Mitigating Congestion in Small Urban & Rural Areas

Lead PI: Dr. Steven Click, Tennessee Technological University

Team: Dr. Siva Srinivasan, University of Florida; Dr. Mike Hunter, Georgia Institute of Technology

Freeway Management for Optimal Reliability

Lead PI: Dr. Yafeng Yin, University of Michigan

Team: Dr. Nagui Roupail, North Carolina State University; Dr. Jorge Laval, Georgia Institute of Technology; Dr. Rod Turochy, Auburn

Cost Share Projects To-Date

Before and After Implementation Studies of Advance Signal Technologies in Florida

PI: Dr. Lily Elefteriadou, University of Florida
FDOT # BDV32-977-05

Evaluation of Arterial Corridor Improvements and Traffic Management Plans in Florida

PI: Dr. Lily Elefteriadou, University of Florida
FDOT # BDV31-977-44

Development and Testing of Optimized Autonomous and Connected Vehicle Trajectories at Signalized Intersections

PI: Dr. Lily Elefteriadou, University of Florida; Dr. Carl Crane, University of Florida; Dr. Sanjay Ranka, University of Florida
FDOT # BDV31-977-45

Transportation Safety Center

PI: Maria Cahill, AICP; UFTI/T2 Center; Dr. Siva Srinivasan, University of Florida; Dr. Ilir Bejlari, University of Florida
FDOT # BDV33-945-002

Improvements to the FDOT Travel Time Reliability Model for Freeway Analysis

PI: Dr. Lily Elefteriadou, University of Florida
FDOT # BDV32-934-01

Local Technical Assistance Program for Transportation Agencies 2016-2017

PI: Maria Cahill, AICP, UFTI/T2 Center
FDOT # BDV33-977-04

Safe Routes to School Technical Assistance 2017

PI: Dr. Ruth Steiner, University of Florida; Maria Cahill, AICP, UFTI/T2 Center
FDOT # BDV33-945-04

Local Technical Assistance Program for Transportation Agencies 2017-2018

PI: Matthew Muller, UFTI/T2 Center
FDOT # BDV33-977-05

Assessment of Connected Vehicle Data Support of SunGuide® Traffic Management Center

PI: Dr. Mohammed Hadi, Florida International University
FDOT # BDV29 TWO 977-21

Guidelines for the Evaluation of Ramp Signaling Deployments in a Real-Time Operations Environment

PI: Dr. Mohammed Hadi, Florida International University
FDOT # BDV29 TWO 977-25

Data and Modeling Support of Off-Line and Real-Time Decisions Associated with Integrated Corridor Management

PI: Dr. Mohammed Hadi, Florida International University

Sponsor: FDOT

Estimation of System Performance and Technology Impacts to Support Future Year Planning

PI: Mohammed Hadi, Florida International University

FDOT # BDY29 977 -37

Transportation Research, Workforce Development, and Technology Transfer Initiatives for Reducing Congestion in Alabama and the Southeast U.S.

PI: Dr. Virginia Sisiopiku, University of Alabama at Birmingham

Sponsor: Alabama Department of Transportation

FREEVAL-NC Development, Training and Support (2017-46)

PI: Dr. Behzad Aghdashi, North Carolina State University

Sponsor: North Carolina Department of Transportation

Reliability Data and Analysis Tools Implementation Assistance Program Proof of Concept Pilot Study (SHRP2 L38)

PI: Dr. Billy Williams, North Carolina State University

Sponsor: North Carolina Department of Transportation

Peak Spreading Tool Implementation (2018-07)

PI: Sarah Searcy, Research Associate, North Carolina State University

Sponsor: North Carolina Department of Transportation

Warrant Development for Signalization of Superstreet Intersections with Two or Three Approaches (2017-11)

PI: Shannon Warchol, Research Associate, North Carolina State University

Sponsor: North Carolina Department of Transportation

Reasonable Alternatives for Grade-Separated Intersections (2018-20)

PI: Shannon Warchol, North Carolina State University

Sponsor: North Carolina Department of Transportation

Guidelines for Left Turn Signal Phasing Options by Time of Day: A Safety and Operational Study (2018-22)

PI: Shannon Warchol, North Carolina State University

Sponsor: North Carolina Department of Transportation