



# UNIVERSITY OF CENTRAL FLORIDA



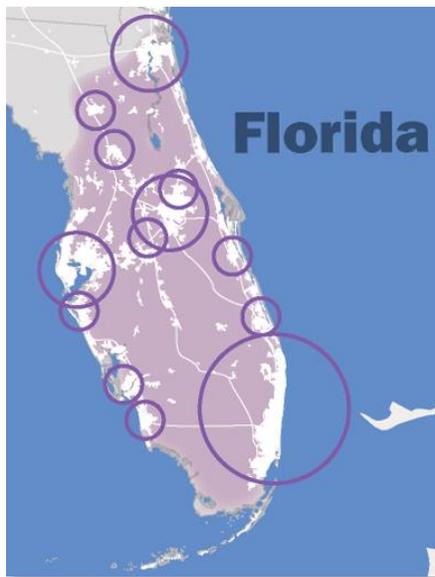
FLORIDA A&M UNIVERSITY - FLORIDA STATE UNIVERSITY  
**COLLEGE OF ENGINEERING**

The University of Central Florida (UCF) and the Florida Agricultural and Mechanical University – Florida State University (FAMU-FSU) are pleased to present this proposal for the Designation of Beyond Traffic Innovation Center. Both UCF and FAMU-FSU are located in Orlando, Florida, and offer ABET accredited degrees across various science, technology, engineering, and mathematics (STEM) disciplines. These universities are located in the Florida Megaregion, and have been active participants in future transportation technology research and the development of innovative mobility solutions both regionally and nationally. The USDOT recognized University Transportation Center (UTC) at UCF has worked extensively with USDOT and its various program offices to assist a community of practice in understanding and recognizing transportation solutions that will affect the way we move in the future and as outlined in the USDOT *Beyond Traffic* report. The partnership of the two universities will provide resources to further research transportation issues, offer expanded educational and public outreach programs to support the next generation of transportation workforce, and continue to influence and guide both public and private leaders to advancing the nation into the next century of transportation. The letters of commitment from our supporting partners have been attached in a separate document.

**Proposal Title:** Designation of Beyond Traffic Innovation Center  
**Beyond Traffic Coordinator:**  
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## Florida Mega Region

Unlike the other 11 emerging mega regions within the United States, the Florida Megaregion is wholly contained within its borders and offers the largest concentration of multi-disciplined industry. Florida is quickly becoming a technology development leader, thanks to legislation to allow Florida to become the



second State in the Nation to legalize the testing of automated vehicles on public roadways, and became a forerunner for the development of a model state policy towards automated vehicles. Various other industries such as aerospace, space, freight, and renewable energy have flourished within the State, due to the multiple public-private partnerships with institutions like UCF and FAMU-FSU. This creates a Megaregion that has become a global leader in transportation technology, and development. This Megaregion also leads the nation in tourism, with almost 70 million visitors in 2015, Central Florida will demonstrate transportation technology on a local, regional, national, and international scale. However, this high volume of tourism and bustling industry strains an already fatigued transportation system in the Megaregion. This problem is recognized by the State. Transportation goals and research and development of new solutions by the State's Universities has been encouraged. Research completed thus far has led to a clearer understanding of our growth, our mobility issues and some solutions to these issues. However, many questions

remain unanswered, and UCF and FAMU-FSU are working towards the common goal of understanding and developing solutions to these questions within our Megaregion.

## Why UCF and FAMU-FSU

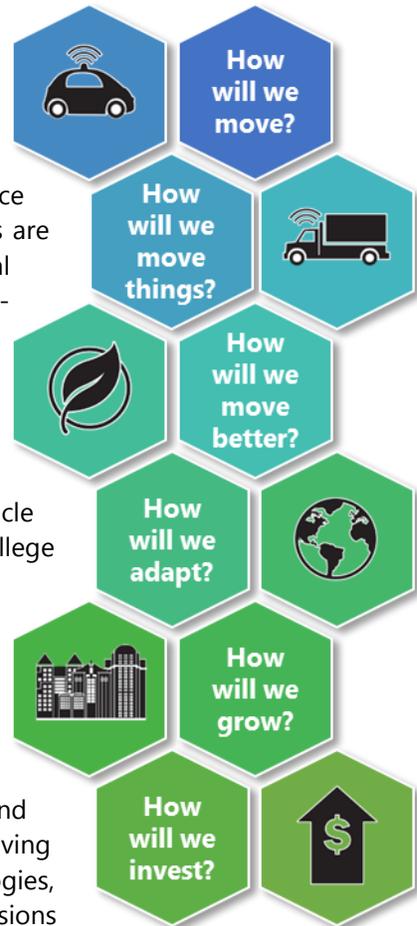
UCF is one of the largest universities in the nation, with 70,000 enrolled students between two Central Florida campuses, and a new campus to be constructed in Downtown Orlando with an additional student population of approximately 8,000. The FAMU-FSU, located in Downtown Orlando, and is identified minority institution of higher education, providing assistance in research activities through extension of staff, resources and capabilities. Both universities are actively involved in the MetroLab Partnership<sup>1</sup> with the City of Orlando. This network includes 38 cities, 4 counties, and 51 universities. MetroLab has contributed to the development and implementation of Smart City elements nationwide. The UCF annual research expenditures exceed \$120 Million, with a large portion going directly to transportation and simulation research. The research is conducted at the Center for Advanced Transportation Systems Simulation (CATSS), a recognized research entity housed by the CECE Department at UCF. The CATSS lab provides significant resources to USDOT, FDOT, MetroPlan Orlando, Florida Turnpike, the City of Orlando, and Central Florida Expressway in research, analysis, policy development and community contributions.

The mission of the CATSS lab is to advance U.S. technology and expertise in transportation through education, research, and technology knowledge transfer at university-based centers of excellence. Areas of growth within the center include the utilization of microsimulation and human-centered simulation coupled with large scale field data collection to increase mobility and safety of surface transportation. Data science, automated vehicles, and electric vehicles are some of the topics being studied by CATSS lab affiliated faculty. Several prominent faculty including Prof. Essam Radwan, Prof. Mohamed Abdel-Aty, Prof. Naim Kapucu and Prof. Sobanjo have contributed to enhance our understanding and improve safety and efficiency of transportation systems at UCF and FAMU-FSU. The use of driving simulators to test new concepts and designs has been the strongest point of CATSS and will be utilize two state of the art simulators for future applications related to autonomous vehicles, vehicle-to-vehicle communications, and vehicle-to-pedestrian communications. UCF's College of Engineering and School of Public Administration already have several pertinent courses and research opportunities in the areas of policy, design implementation, operations, and maintenance.



### How Will We Move?

The Partnership has been assisting communities of practice, agencies, jurisdictions, and members of the public to better understand the implications of this question. Provided results from research involving simulation, driver and pedestrian behavior testing, automated technologies, connected technologies, and urban growth social implications to discussions and conversations has assisted leaders and decision makers within the Megaregion



<sup>1</sup><http://metrolab.heinz.cmu.edu/>

to plan for a better tomorrow. The Central Florida Partnership *How Shall We Grow*<sup>2</sup> plan was completed after an extensive public outreach and partnership input effort. This plan provides guidance for innovative transportation solutions within Central Florida and the Florida Megaregion.



## How Will We Move Things?

Freight movement has been a focus of research within the CATSS lab, through understanding how it affects communities, transportation networks and economics. The resources available within the partnership will support comprehensive research for the movement of goods. Seeking safety, environmental stewardship, minimizing community impacts, and increasing mobility and efficiency remains the goals of the Megaregion, and the Partnership. Having these goals as guidance for research activities has demonstrated results that can be and have been supplied to broader national transportation issues and discussions.



## How Will We Move Better?

USDOT strategic plan outlines a strategy to work towards zero fatalities across all modes of transportation and depends on transportation network that provides safe, reliable, effective, and sustainable mobility for all users. The Partnership has been committed to USDOT efforts and Megaregion plans through research on innovative technologies for safety including automated vehicles. Part of the research partnership between the City of Orlando and UCF has a goal of 100% sustainable energy sources for City facilities. Active research also involves implementations of electric and autonomous transit vehicles within urban areas, and further V2X communication technology research and how to collect, harness, disseminate and utilize data from this technology.



## How Will We Adapt?

The challenges facing our worlds today involve significant impacts from Climate Change. With topics being discussed on a global level, innovations and research conducted by our partnership have provided significant data, and resources to many collaborative communities. UCF and FAMU-FSU are participating research partners of the Florida Climate Institute (<http://ucf.floridaclimateinstitute.org/who-we-are/>). Working towards common goals to decrease impacts of transportation to this, the collaborative group provides resources and guidance to leadership both public and private, educational outreach programs and further discussion to organizations such as USDOT program offices, TRB, NHTSA, and ITE.



## How Will We Grow?

The world is rapidly growing to a technology based network of connected communities, and cultures. The next generation of Transportation Professionals will be understanding of concepts, theories and technology we cannot yet imagine. This understanding will only be achieved through Universities and outreach programs liken to that of ours. The work completed and education provided has allowed for the expansion of technology programs within the Florida Megaregion at all levels of education. Outreach to

<sup>2</sup><http://www.myregion.org/index.php?src=gendocs&ref=HowShallWeGrow&category=RegionalVision>

underserved communities, veterans, elderly and persons with disabilities remains a vital part of the Partnerships vision. Education extensions to local public schools, technical programs and community colleges has allowed for a better understanding of transportation technology and continues to prepare the next generation of the transportation workforce.



## How Will We Invest?

UCF and FAMU-FSU will continue to report and share the status and results of its extensive research efforts. As such, our institutions have the capability to reach a national audience through our partnerships and working relationships with organizations. Our work within our Megaregion and partners has helped Florida become a leader in transportation solution



National Partners

- USDOT
- ITS America
- TRB
- IBTTA
- NHTSA
- ITE
- Urban Land Institute
- Congress on New Urbanism



Megaregion Partners

- Regional Planning Councils
- Metropolitan Planning Organizations
- Florida League of Cities
- Florida Association of Counties
- Florida Climate Institute
- FAPA
- Florida ITE
- ITS Florida

innovation. The Partnerships collaborative efforts have been used extensively to guide the development of investment strategies for State agencies, municipalities, and institutions. The strategies provide guidance for smart investments that will support the growth and development of the next transportation workforce, support the safety goals of USDOT, and FHWA, and steer practitioners, and public and private officials towards safe, sustainable, and meaningful investments.

## The Beyond Traffic Innovation Center at UCF/FAMU-FSU

The Partnership of UCF and FAMU-FSU is proud to present this application and will continue its commitments established within the community of practice, it's Megaregion, and to the USDOT and its program offices. Our research, and shared contributions to regional and national conversations on the future state of transportation will be focused and aligned with the common goals of the nation and the Beyond Traffic: 2045 vision. This Partnership will provide a significant amount of resources and capabilities to the network of Beyond Traffic Innovation Centers, and continue to support and provide conversation to transport the Florida Megaregion, The Nation, and The World to a better tomorrow.

On behalf of this Partnership, I am pleased to present this proposal. Please consider the many resources, capabilities, and benefits our institutions can offer to this network of centers.

Sincerely,

Dr. Naveen Eluru  
Associate Professor, Department of Civil, Environmental and Construction Engineering  
University of Central Florida