



# **Center for Multimodal Solutions for Congestion Mitigation (CMS)**

## **Strategic Plan**



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**Submitted to the  
Research and Innovative Technology Administration  
U.S. Department of Transportation  
Washington, DC 20590-0001**

October 2007

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## *Section I – Program Overview*

This section provides a contextual basis for understanding the objectives and activities described in Section II - Program Activities.

### ***I.A Glossary***

The following is a list of acronyms used in this document.

CCE:	Department of Civil and Coastal Engineering
COE:	College of Engineering
CMS:	Center for Multimodal Solutions for Congestion Mitigation
EDGE:	Electronic Delivery of Graduate Education
ETDM:	Efficient Transportation Decision Making Program
EAB:	External Advisory Board
FDOT:	Florida Department of Transportation
FGDL:	Florida Geographic Data Library
GeoPlan:	Geo-Facilities Planning and Information Research Center
GIS:	Geographic Information Systems
ISC:	Internal Steering Committee
ISE:	Department of Industrial and Systems Engineering
Mc Trans:	Center for Microcomputers in Transportation
NODRTC:	National Older Driver Research and Training Center
OGMP:	Office of Graduate Minority Programs
OT:	Department of Occupational Therapy
PRB:	Project Review Board
RITA:	Research and Innovative Technology Administration
SIS:	Strategic Intermodal System
STC:	Southeastern Transportation Consortium
T <sup>2</sup> :	Florida Transportation Technology Transfer Center
TRB:	Transportation Research Board
TRC:	Transportation Research Center
UF:	University of Florida
UF EDGE:	Electronic Delivery of Graduate Engineering at the University of Florida
URP:	Department of Urban and Regional Planning
US DOT:	United States Department of Transportation

## ***I.B Center Theme***

The theme of this center is “Multimodal Solutions for Congestion Mitigation.” There are four primary reasons for selecting this theme: 1) Faculty and staff associated with the Transportation Research Center (TRC) are already leaders in this area, and have contributed significantly to the state of the art and state of the practice in congestion modeling and management; 2) Congestion has been identified as a significant problem in our nation’s transportation system and is one of the priorities identified by the US DOT (National Strategy to Reduce Congestion on America’s Transportation Network, US DOT, May 2006), and the Transportation Research Board (TRB, Critical Issues in Transportation, December 2005); 3) FDOT has identified the alleviation of congestion in the Strategic Intermodal System (SIS) as one of its primary goals; and 4) Multimodal approaches to congestion mitigation are the ones most likely to succeed because they consider the transportation system in its entirety.

The theme of multimodal solutions for congestion mitigation is consistent with the goals of the US Department of Transportation and those of our major partner, the Florida Department of Transportation. In the US DOT’s Strategic Plan for 2003-2008, five strategic objectives are identified: safety, mobility, global connectivity, environmental stewardship, and security ([www.dot.gov/stratplan2008/strategic\\_plan.htm](http://www.dot.gov/stratplan2008/strategic_plan.htm)). This strategic plan addresses the goals of enhanced mobility and, to a lesser extent, that of global connectivity, in the context of environmental stewardship. The strategic objective of mobility is to “advance accessible, efficient, intermodal transportation for the movement of people and goods.” The desired outcomes include: “1) improved infrastructure in all modes; 2) reduced congestion in all modes; 3) increased reliability throughout the system; and 4) increased access for all Americans.” The global connectivity objective is to “facilitate a more efficient domestic and global transportation system that enables economic growth and development.”

Florida’s SIS is a state-wide network of high-priority transportation facilities, including the state’s largest and most significant commercial service airports, spaceport, deepwater seaports, freight rail terminals, passenger rail and intercity bus terminals, rail corridors, waterways and highways (<http://www.dot.state.fl.us/planning/SIS/aboutsis.asp#background>). The plan for Florida’s SIS was developed based upon a number of studies that identified the need for congestion relief and the improved transport of passengers and goods brought about through enhancements to freight mobility, investment in trade corridors and efficient intermodal connections between airports, cruise terminals, and major tourist attractions. An important component of the plan is multimodal planning accounting for the interrelations of all modes of the transportation system and more strategic and efficient protection of the state’s transportation interests.

### **I.B.1. SCOPE OF THE CENTER**

The theme of the center will support both high-priority areas identified by US DOT (UTC Program Tier 1 Grant Solicitation 6.06): advanced research, and congestion chokepoints. It is expected that faculty and students at UF will conduct advanced research within four focus areas: 1) Recurrent congestion; 2) Non-

recurrent congestion, 3) Multimodal strategies, and 4) Demand modeling. Specific research projects may address two or more of these areas. Lists of potential projects by area are provided below:

1) Recurrent congestion:

- Congestion modeling and mitigation strategies inside and around “hubs” such as seaports and airports;
- Travel time reliability for freight and people between selected hubs, and across selected corridors;
- Streamlining of freight- and traveler-security screenings to minimize delays;
- Congestion pricing strategies;
- Assessing the effectiveness of policies that address congestion (e.g., concurrency, travel demand management, travel supply management, congestion management systems, etc.);
- Modeling of the interactions between access management/local connectivity and traffic congestion (opportunities of internal capture and other strategies to reduce traffic on major arterials);
- Strategies to promote non-motorized (walking and biking) travel;
- Assessment of advanced technologies and Intelligent Transportation Systems with respect to congestion mitigation;
- Truck-movement bottlenecks in the SIS;
- Driver characteristics for various driver populations (such as older drivers) and their impacts on highway capacity; and
- Improvement of traffic signal systems to reduce delays in urban corridors.

2) Non-recurrent congestion:

- Congestion modeling and mitigation of emergency transport of individuals and supplies during disasters (including evacuations prior to hurricanes, security threats, etc.);
- Congestion modeling and mitigation strategies during special events (such as football games) and around activity generators (such as cruise ships); and
- Modeling and mitigation of congestion due to work zones and incidents.

3) Multimodal strategies:

- Multimodal travel time estimation/reliability in urban corridors;
- Multimodal/intermodal travel time estimation/reliability across hubs;
- Multimodal data warehouse development and utilization as a resource for transportation professionals;
- Strategies for intermodal connectivity of various transportation modes at SIS hubs;
- Optimization of vehicle flow in the presence of high pedestrian and bicycle flow; and
- Congestion mitigation strategies to increase supply-chain productivity.

4) Demand modeling:

- Strategies for “repackaging” the freight and traveler demand to mitigate congestion;
- Travel demand forecasting for hubs;
- Behavioral responses of travelers to congestion levels and mitigation strategies;

- Development of alternative land use/transportation configurations and their impacts on roadway capacity; and
- Impacts of Information and Communication Technologies (ICTs, such as internet, e-mail, and cell phones) on travel patterns.

## ***I.C Center Director's Summary***

Our vision for the Center for Multimodal Solutions for Congestion Mitigation (CMS) is to develop a strong interdisciplinary network of researchers fully integrated within the University of Florida to develop and analyze innovative approaches to solving congestion problems. The center will examine congestion on both passenger- and freight-transportation systems, and develop solutions that will focus on enhanced multimodal connectivity and coordination, accessibility, system interoperability and transportation community outreach. The CMS will also strive to expand the workforce of transportation professionals by supporting curricula in a wide range of disciplines that have bearing on the solutions to transportation problems.

The CMS will accomplish this vision as a result of the co-location of transportation researchers across several UF departments, and the willingness of these individuals to collaborate with other departments on campus through interdisciplinary forums to develop truly innovative multimodal solutions to congestion problems. This multidisciplinary team brings rich expertise in a variety of subject areas such as demand modeling, urban planning, traffic flow theory, traffic operations, and systems analysis, as well as methodological areas such as statistics, optimization, simulation, and computer methods. This diverse knowledge base is critical for successfully undertaking a comprehensive study of congestion mitigation.

The CMS activities will enhance and complement FDOT's goals, and Florida will serve as a critical testbed for innovative multimodal solutions to congestion problems. FDOT established the Strategic Intermodal System (SIS) to address congestion and multimodal connectivity issues, and to enhance Florida's economic effectiveness by focusing the state's limited resources on selected high-priority transportation facilities. (<http://www.dot.state.fl.us/planning/SIS/strategicplan/default.htm>). Florida is the fourth-most-populous state in the nation, with a population expected to grow from 17.87 million in 2005 to 22.89 million in 2020, an average annual growth rate of 1.56%. The opportunity to employ multimodal transportation solutions to meet the needs generated by this population growth is significant. At present, nearly 90% of Floridians live in urban areas and 70% within the service area of a transit system. There are approximately 117,000 miles of public roads in Florida. Florida's rail system consists of 2,871 miles of track, operated by 13 railroad companies and four terminal switching companies. In 2002 this system transported about 161 million tons of cargo and 826,000 passengers (<http://www.dot.state.fl.us/planning/policy/pdfs/src.pdf>). Florida has over 830 airports, of which 130 are publicly owned and 19 provide scheduled commercial passenger service. In 2003 over 120 million passengers and 3.2 million tons of cargo were transported by Florida airports. The sea ports in Florida serve as an example of multimodal transportation requirements. For example, Port Everglades handles over 25 million short tons of goods per year, requiring loading of over 3000 trucks per day. The Port of Tampa handles over 48 million short tons per year, with over 3500 trucks per day serving the port (Florida Statistical Abstract, 2005, p. 459).

To meet the challenges of this situation, the CMS will draw on the breadth of the educational programs offered by the University of Florida, the quality of its faculty, and the institutional capacity and financial commitment available to carry out this vision. Each of the CMS affiliate groups within the university contributes unique expertise and relationships that allow the CMS to develop a broad interdisciplinary education program, undertake large-scale projects, and serve the leadership function desired by the US DOT.

In addition, the CMS will support the national strategy for surface transportation research as outlined by USDOT in the following documents:

- National Highway Research and Technology Partnership's *Highway Research and Technology: The Need for Greater Investment*
- Federal Transit Administration's National Research and Technology Program
- U.S. Department of Transportation's Strategic Plan
- U.S. Department of Transportation's Research, Development, and Technology Plan

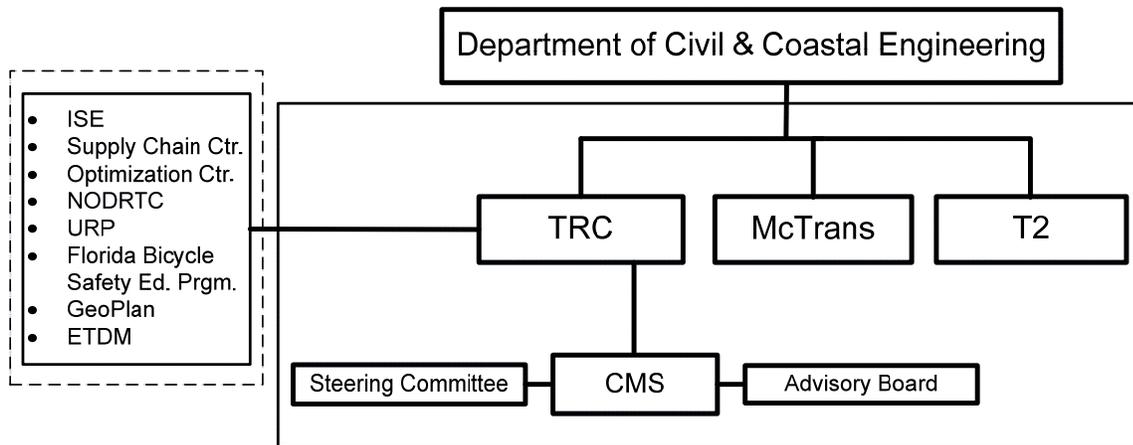
The objective of the center will be to develop, implement and maintain a comprehensive research, education, and technology transfer program that addresses recurring and non-recurring congestion problems through multimodal solutions involving highways, railways, seaports and airports. More specifically, we envision that this program will:

- a) provide an interdisciplinary research and education environment related to the reduction of transportation congestion through enhanced multimodal connectivity;
- b) develop new and effective tools and methods to model and mitigate the growing congestion problems in highways, seaports, airports and railways;
- c) simulate and evaluate the effects of increased multimodal interaction on important metrics of transportation flow in selected corridors;
- d) strengthen the collaboration between UF, FDOT, US DOT and other transportation agencies and address problems that are mutually relevant;
- e) serve as the focal point for research directed toward solving unimodal/multimodal congestion problems locally, regionally, nationally, and internationally;
- f) comprehensively prepare all participating students to become successful professionals in transportation, for careers in the public and private sectors, and in academia;
- g) disseminate research results to the transportation community;
- h) recruit and retain a diverse and multicultural group of U.S. and international students, including women, African Americans, Hispanics, Asians, Native Americans, and other minority students;
- i) strengthen our relationships to other University Transportation Centers (UTCs) and create opportunities for collaborative activities across centers.

## **I.C.1 ORGANIZATIONAL STRUCTURE**

The Department of Civil and Coastal Engineering (CCE) houses the TRC, as well as the Center for Microcomputers in Transportation (*McTrans*), and the Florida Transportation Technology Transfer Center

(T<sup>2</sup>). Tenure-track faculty with transportation expertise are supported in the CCE department, the Industrial and Systems Engineering (ISE) Department, the Department of Urban and Regional Planning (URP) and the National Older Driver Research and Training Center (NODRTC). The CMS will be located within the Department of Civil and Coastal Engineering (CCE) at the University of Florida, and will be fully integrated within that institution of higher learning. The CMS will benefit from the TRC's technical expertise and administrative personnel. The CMS will operate as an entity with separate cost and accounting structures. The TRC will provide CMS access to participation in collaborative interdisciplinary efforts throughout the university. An organizational chart of the University of Florida Transportation Program shows the relationships between the TRC and the CMS in Figure 1.



## I.C.2 INTERNAL STEERING COMMITTEE (ISC)

An Internal Steering Committee (ISC) has been formed to guide the center activities, manage its resources, and ensure its objectives are being met. It is expected that the ISC will meet once a month or more often if needed, and will be comprised of the following members:

- Dr. Lily Elefteriadou, Director of the Center, and Chair of the internal steering committee
- Dr. Don Hearn, ISE representative
- Dr. Dennis McCarthy, NODRTC representative
- Dr. Rey Roque, CCE-Highway Materials representative
- Dr. Ruth Steiner, URP representative
- Dr. Scott Washburn, CCE-Transportation representative
- Ms. Janet Degner, T<sup>2</sup> representative
- Mr. Bill Sampson, *McTrans* representative
- Ms. Ines Aviles-Spadoni, CMS Coordinator

The ISC, along with FDOT representatives will form the Project Review Board (PRB), which will be responsible for setting research priorities, selecting research projects for funding, and monitoring the progress of funded projects. The PRB is expected to meet quarterly.

The ISC will be responsible for educational and technology transfer initiatives of the CMS. For example, they will ensure that students are progressing toward their degree goal as expected, they will play a leadership role in the development and organization of seminars, and they will select the student of the year award recipient.

### **I.C.3 EXTERNAL ADVISORY BOARD (EAB)**

An External Advisory Board will be created, to guide the activities of the CMS. The EAB will provide input in formulating and selecting projects with a high probability of success in congestion mitigation, in evaluating the research selection and performance processes, in guiding educational activities, and in assisting in technology transfer at local, state and national levels. The CMS will involve Florida Department of Transportation (FDOT) and U.S. Department of Transportation (US DOT) representatives to serve on the EAB. Other entities participating in the EAB will include representatives from the trucking industry, port operations, rail industry and other private-industry partners (such as the AAA). Their participation will provide excellent opportunities for leveraging UTC funds, and for disseminating research results to the wider transportation community. It is expected that approximately 15-20 individuals will be invited to serve on the EAB, representing the public and private sector, and academia. The following individuals have already agreed to serve on the EAB: Dr. Genevieve Guiliano (University of Southern California), Dr. Mark Hallenbeck (University of Washington), Mr. Wayne Kittelson (Kittelson and Associates), Mr. Richard Long (Florida Department of Transportation), and Mr. Ananth Prasad (Florida Department of Transportation). The CMS has been working with FHWA (Mr. Dennis Judycki) to identify appropriate individuals from the US DOT to serve on the EAB.

The EAB will meet at least once a year, and its members will have the opportunity to interact with CMS faculty, staff, and students. At that event, as well as during venues such as the annual Transportation Research Board meeting. An annual one-day conference will be organized in conjunction with the EAB annual meeting, where students involved in CMS will have the opportunity to present their work. The conference will be open to the transportation community. Additional information regarding this conference is provided in Section II.B.3.e.

### **I.C.4 ANTICIPATED STATUS AT THE END OF THE GRANT**

It is expected that at the end of the grant the center will have produced significant research results related to the development of congestion mitigation strategies; will have created a synergy between faculty conducting interdisciplinary transportation-related research across the UF campus; will have strengthened and institutionalized the collaboration between UF, FDOT, US DOT and other transportation agencies and address problems that are mutually relevant; will have produced a knowledgeable cadre of high-quality transportation professionals with careers in the public and private sectors and in academia. The recruiting process developed will generate increased interest in transportation from students with a variety of backgrounds. The implementation of new transportation education initiatives at UF will further enhance the

capabilities of our graduate students, and will expose them to a variety of transportation research and learning activities. The delivery of technology transfer programs will help bring recent research findings to transportation professionals and will enhance the state of the practice in Florida and across the nation.

It is expected that several of these elements will be sustainable after the grant has terminated, including: the synergy created between UF faculty working together on interdisciplinary programs on congestion mitigation; the collaboration between the TRC, FDOT, and US DOT; and new educational and technology transfer activities initiated with seed funding from CMS. In addition, networking and collaborative opportunities with other UTCs may generate additional research, educational, and technology transfer activities beyond the life of this grant.

## *Section II – Program Activities*

This section describes CMS's specific program goals, the activities planned to accomplish these goals and the performance measures that will be used to assess the Center's progress to RITA.

### **II.A Research Selection**

**Research Selection Goal:** An objective process for selecting and reviewing research that balances multiple objectives of the program.

#### **II.A.1. BASELINE MEASURES**

All baseline measures for the CMS are provided in Appendix A. The values for baseline measures 1, 1a, and 2 are 0 as the CMS is a new center.

#### **II.A.2. RESEARCH SELECTION PROGRAM OUTCOME**

The CMS will develop and implement a multi-step, rigorous peer-review-based research selection process. This process will result in selecting those projects that support the objectives of the center, its partners, and the USDOT; it will be comprehensive, and will consider the many different disciplines that constitute the CMS; and it will be based on both internal expertise and priorities, and external expert peer reviewers, to ensure integrity in the review process. The project selection process will be led by the Project Review Board (PRB), with assistance from external reviewers. The PRB will consist of the Internal Steering Committee (ISC) and 3 representatives of FDOT, and its objective will be to select and review proposals for funding. A list of potential proposal peer-reviewers will be compiled with the assistance of the PRB as well as other UTCs, based on specific expertise in the fields related to the Center's theme. After the process is completed each year, the PRB, along with the EAB, will evaluate the annual outcome, and will adjust the process as necessary.

#### **II.A.3 PLANNED ACTIVITIES**

This section describes the major activities that CMS will undertake to bring about the described program outcome. Figure 1 provides an overview of the research selection process.

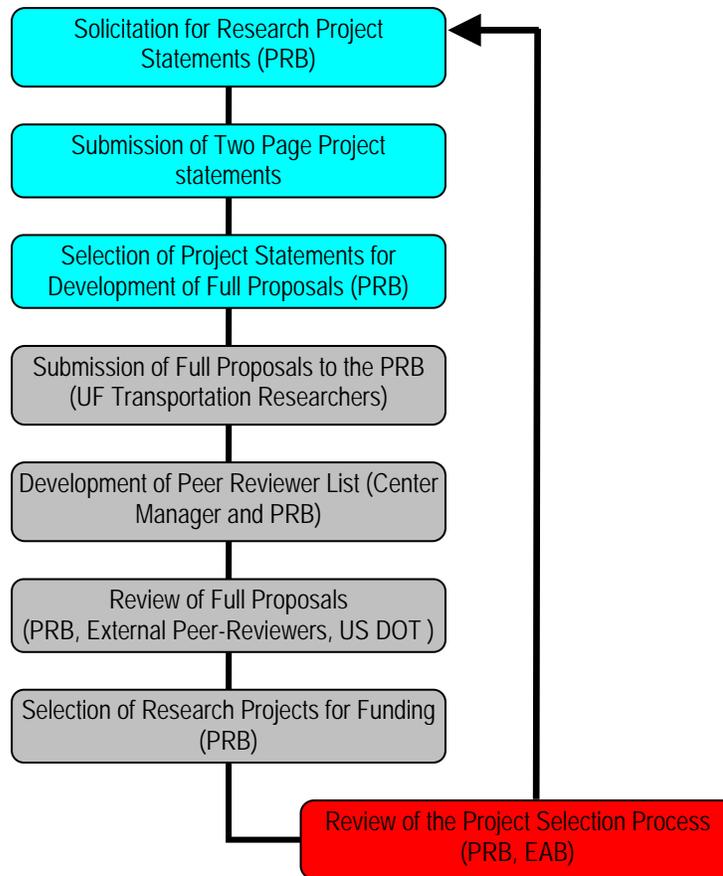


Figure 1: Research Selection Process

### II.A.3.a Research Project Solicitation and Preliminary Selection

The research project solicitation process will consist of the following steps:

1. The CMS will solicit research project statements (basic research, advanced research, and applied research) from the UF transportation research community. This solicitation will be distributed to stakeholders by email and posted on the CMS website. A 3-page proposal, including an approximate budget, will be requested at this stage. This pre-proposal will outline and discuss the objectives of the research, the methodology planned, the expected results and contributions to the state-of-the-art, technology transfer activities, as well as information on matching funds. It will also provide a list and brief qualifications of the individuals expected to participate in the research, including the status and list of products (i.e., journal papers, presentations, etc.) of previously funded CMS projects by each of the investigators.
2. Project statements will be submitted to the PRB for review.
3. The PRB will select a short list of project statements and will solicit full research proposals. The PRB will rank the submitted project statements according to the review criteria outlined in Section II.A.3.c.

### II.A.3.b Full Proposal Review and Final Project Selection

1. Full project proposals (approximately 7-10 pages) will be submitted to the PRB, and each one will be sent to 3-4 peer-reviewers for confidential review. All reviews will include at least one USDOT reviewer, and one member of the PRB. Members of the PRB who are part of the research team for a particular proposal will not participate in the discussion regarding the funding of that proposal.
2. External reviewers will be identified with the assistance of the PRB, other UTCs, and suggestions from UF researchers, and proposals will be matched to reviewer expertise.
3. Reviewers will be asked to review proposals on the basis of intellectual merit, broader impacts, and relevance to CMS's theme. Scoring of the proposals will consist of:
  - a. Excellent: overall outstanding proposal; deserves highest priority for support.
  - b. Very Good: high quality proposal in nearly all respects; should be supported if funding is available.
  - c. Good: a quality proposal worthy of support.
  - d. Fair: proposal lacking in one or more critical aspects; key issues need to be addressed. The proposal needs revision in order to receive funding.
  - e. Poor: proposal has serious deficiencies and should not be funded.
4. The PRB will evaluate the proposals considering the external reviews, and will make final funding decisions based on CMS priorities and external rankings of the proposals. The PRB may decide to fund a project as proposed, fund with scope and/or budget modifications, or not to fund. Each funded project's description will be posted on the CMS website and submitted to TRB's Research in Progress (RiP) database, located at <http://rip.trb.org/>.

### II.A.3.c Proposal Review Criteria

The PRB and external reviewers asked to provide their input on specific proposals will be asked to use the following criteria in reviewing research problem statements and proposals:

1. What is the extent to which the research problem statement addresses recurring and non-recurring congestion problems through multimodal solutions?
2. Is the project supportive of the national strategy for surface transportation research as identified by the following:
  - a) National Highway Research and Technology Partnership Report: "Highway Research and Technology: The Need for Greater Investment" (<http://gulliver.trb.org/publications/rforum/HwyRandT.pdf>)
  - b) Federal Transit Administration's National Research and Technology Program ([http://www.fta.dot.gov/26\\_ENG\\_HTML.htm](http://www.fta.dot.gov/26_ENG_HTML.htm))
  - c) US Department of Transportation Strategic Plan ([http://www.dot.gov/about\\_dot.html](http://www.dot.gov/about_dot.html))
  - d) US Department of Transportation Research, Development, and Technology Plan (<http://www.volpe.dot.gov/infosrc/strtplns/intex.html>)
3. Does the project support and involve graduate and/or undergraduate students?

4. Does the project provide opportunities for external partnerships with public or private agencies?
5. Does the project provide opportunities for interdisciplinary collaboration?
6. Is the topic important in advancing the state of the art in congestion mitigation?
7. Is the proposed work original?
8. How well conceived and organized is the research statement?
9. Is the research statement realistic in terms of scope vs. resources?
10. How qualified is the proposer (or team of proposers) to carry out the proposed work successfully?
11. Are there technology transfer opportunities?

#### **II.A.3.d Evaluation and Adjustments to the Research Selection Process**

The PRB along with the EAB will revisit the proposal review process annually and recommend changes to ensure the project selection process is inclusive, efficient, and fair, and that it is consistent with the Center's objectives.

#### **II.A.3.e Discussion of the US DOT Recommended Activities.**

The CMS will support national transportation needs by addressing high-priority areas identified by DOT and its Operating Administrations. Two such DOT-wide priority areas which the Center will address are:

##### **II.A.3.e.1 Advanced Research**

The center will strive to fund advanced research by emphasizing the need for such research in the research solicitation and the review process.

##### **II.A.3.e.2 Congestion Chokepoints**

In support of CMS' theme and the Secretary of Transportation's congestion mitigation strategy the PRB will promote projects that identify and/or ameliorate the factors that contribute to congestion of freight and/or passenger traffic.

#### **II.A.4 Performance Indicators**

CMS staff will track all necessary information to report performance measures 1, 1a, and 2 shown in Appendix A. The proposal form will ask each Principal Investigator to categorize a research project as basic, advanced, or applied research, and the information will be entered into a database, which will track all CMS projects.

## **II.B Research Performance**

**Research Performance Goal:** An ongoing program of basic and applied research, the products of which are judged by peers or other experts in the field to advance the body of knowledge in transportation.

### **II.B.1 BASELINE MEASURES**

The information called for as Baselines 3 and 4 is provided in Appendix A. The values for these are 0 as the CMS is a new center.

### **II.B.2 RESEARCH PERFORMANCE PROGRAM OUTCOME**

It is envisioned that the research conducted by the Center will lead to new and innovative congestion mitigation strategies, which will address both demand and capacity issues, and various modes and types of facilities. The activities of the center will bring together transportation researchers from various disciplines and will attract an increasing number of students in transportation. A rigorous research performance review process will be implemented to ensure that the research conducted at the center is completed as scheduled; it supports the objectives of the Center, and is disseminated to the transportation community.

### **II.B.3 PLANNED ACTIVITIES**

The major activities that CMS will undertake to bring about the described Program Outcome are described below.

#### **II.B.3.a Project Monitoring**

The principal investigator for each project will be responsible for preparing quarterly reports detailing the progress of the project, in terms of both schedule and budget. The quarterly report will help: 1) track the project expenditures including matching requirements, 2) track the progress of project tasks to ensure that the research is proceeding in a timely fashion, 3) evaluate the students' progress toward their educational objectives, and 4) provide data for the baseline measures collected by the CMS Center Manager. The CMS Center Manager will coordinate and monitor the submission of all quarterly reports and will summarize the status of all research projects on a quarterly basis. The ISC in its quarterly meeting will review this summary to monitor each project's progress and will take all necessary measures to ensure research is completed in a timely fashion and results are disseminated to the transportation community. The ISC may invite researchers to its meetings to discuss the progress or particular aspects of a funded project.

#### **II.B.3.b Project Final Reports**

Each Principal Investigator will produce and submit to the PRB a draft final report, including a 1-page executive summary, for peer-review. The CMS will provide style guidelines to ensure consistency of all CMS products. The PRB will send the draft final report to up to four reviewers, including one USDOT and one FDOT reviewer. When applicable, at least one representative of the matching/partner entity will be asked to provide a peer-review of the draft final report. Principal Investigators will be responsible for incorporating peer-review comments into the final report. The CMS will develop a procedure for no-cost extensions, and each Principal Investigator's performance on schedule and budget will be considered for future funding decisions. Final reports will be reviewed by the CMS Center Manager to ensure standard formatting requirements are met. When a report is produced as part of a joint effort, CMS will work with the matching/sponsoring entity to ensure that the report will meet the requirements of all partners. All final reports produced will be posted on the Center's Web site.

### **II.B.3.c Papers and Presentations**

Principal Investigators will be strongly encouraged to present and publish their research findings to appropriate conferences and journals. CMS-funded research will also be presented by students and faculty at the annual conference to take place together with the annual EAB meeting. All accepted research papers and presentations will be posted on the CMS website, and will be listed in the center's annual report.

### **II.B.3.d Center Annual Report**

The center annual report will be prepared in accordance to guidelines provided by RITA. Documentation of research progress will be updated on a quarterly basis to facilitate the preparation of the center annual report. The annual report will show the progress of the center in fulfilling the performance measures set by RITA. Annual reports will be posted on the CMS website.

### **II.B.3.e External Advisory Board (EAB)**

As discussed above in Section I.B.3. the EAB will provide guidance related to the direction and management of the CMS. A one-day conference will be organized in conjunction with the annual meeting of the EAB, to showcase the research, education, and technology transfer activities of the center, and to solicit input from the EAB regarding these activities. This conference will provide the opportunity for EAB members to interact with the students and faculty conducting research in the center, and become familiar with the research undertaken.

## **II.B.4 PERFORMANCE INDICATORS**

CMS staff will collect all information necessary to track performance measures 3 and 4. These will be collected on an annual basis directly from the project Principal Investigators. The information will be maintained for the duration of the grant, and will be used internally to monitor the performance of individual Principal Investigators.

## **II.C Education**

Education Goal: a multidisciplinary program of course work and experiential learning that reinforces the transportation theme of the Center.

### **II.C.1 BASELINE MEASURES**

The information called for as Baseline Measures 5 and 6 are provided in Appendix A. Currently, UF offers 7 undergraduate courses (6 in CCE and 1 in URP) and 19 graduate courses (in CCE, ISE, OT, and URP) related to transportation. In 2006, 13 undergraduate and 55 graduate students were involved in transportation research projects from those departments. These do not include students in the structures, or construction areas, who may also be partly conducting transportation-related research.

### **II.C.2 EDUCATION PROGRAM OUTCOME**

It is envisioned that the CMS will provide an interdisciplinary research and education environment related to the reduction of transportation congestion through enhanced multimodal connectivity. The CMS will provide opportunities for further development of existing educational programs and the creation of new educational opportunities. These may include the development of new interdisciplinary courses and programs, the development of distance education courses, or the enhancement of existing courses and activities.

### **II.C.3 PLANNED ACTIVITIES**

#### **II.C.3.a Ph. D. Fellowships**

The CMS will develop and implement a Ph.D. fellowship program as a means to recruit the highest quality graduate students into the program. It is expected that these fellowships will be highly competitive, and the students granted such fellowships will be required to participate in research, and to present and publish the results of their work. Such students will also be given the opportunity to teach or assist in teaching a class, under the mentorship of a faculty member. It is expected that the Ph.D. fellowships will be offered for one year and will be renewable annually, based on performance and progress toward their degree, for a maximum of three years. The ISC will evaluate graduate student applications on an annual basis and will select the most highly qualified students for this program.

#### **II.C.3.b New Initiatives in Transportation Education**

The CMS will provide the opportunity to develop and implement various new initiatives in transportation education. These will include activities such as seed funding for the development of a new program

focusing on transportation, the development of a new transportation-related course, or for the enhancement of an existing course, or for extending the use of the Electronic Delivery of Graduate Education EDGE program to focus on transportation. It is expected that a solicitation will be issued annually by the ISC inviting UF faculty to submit their proposals for consideration. The ISC will select and fund those initiatives that best support the objectives of the center. The solicitation for these will be issued in conjunction with the research proposal solicitation, and project selection will be conducted using the process outlined in Figure

1. Selection criteria for educational proposals are as follows:

1. What is the extent to which the educational activity addresses recurring and non-recurring congestion problems through multimodal solutions?
2. Is the activity supportive of the national strategy for surface transportation research as identified by the following:
  - a. National Highway Research and Technology Partnership Report: "Highway Research and Technology: The Need for Greater Investment" (<http://gulliver.trb.org/publications/rforum/HwyRandT.pdf>)
  - b. Federal Transit Administration's National Research and Technology Program ([http://www.fta.dot.gov/26\\_ENG\\_HTML.htm](http://www.fta.dot.gov/26_ENG_HTML.htm))
  - c. US Department of Transportation Strategic Plan ([http://www.dot.gov/about\\_dot.html](http://www.dot.gov/about_dot.html))
  - d. US Department of Transportation Research, Development, and Technology Plan (<http://www.volpe.dot.gov/infosrc/strtplns/intex.html>)
3. To what extent would this new activity attract students into the transportation field?
4. Does the activity provide opportunities for external partnerships with public or private agencies?
5. Does the activity provide opportunities for interdisciplinary collaboration?
6. How well conceived and organized is the proposal?
7. Is the proposal realistic in terms of scope vs. resources?
8. How qualified is the proposer (or team of proposers) to carry out the proposed work successfully?
9. Are there technology transfer opportunities?

### II.C.3.c Seminar Series

The TRC has regularly scheduled seminars and presentations, both in its "Research Seminars" series and as part of the "ITE Student Chapter Seminars" series. The first category includes seminars on specific research projects by UF and external faculty, as well as presentations by current Ph.D. and Masters students. The second category includes seminars by practitioners employed in private and public agencies. During the last two years, over 20 seminars have been hosted to expose students to the breadth and depth of transportation issues, and broaden their educational experience. These seminars will be expanded to serve as a forum for all CMS students at UF, and students funded under the CMS will be expected to attend them. An attendance sheet will be circulated at each of those events, to establish an attendance record for each student in the program. These seminars will facilitate interdisciplinary collaboration among transportation researchers at UF, and will provide transportation students with a broader perspective on transportation, and information on congestion mitigation tools and strategies. Undergraduates have been

invited to attend these seminars, and participate in ITE activities and field trips such as the TRB annual meeting in Washington, D.C.

Under the auspices of the CMS an additional seminar series will be initiated, focusing on the discussion of specific research papers and reports. It is expected that faculty and students will select several papers for discussion throughout each semester; transportation students will be required to review those papers, and one of them will be selected to present a paper at each seminar, and to lead the discussion regarding the objectives, methods, and conclusions provided by the paper. All TRC affiliated students, faculty, and staff will be invited to attend those seminars.

#### **II.C.3.d Distinguished Speaker Seminar Series**

The CMS will establish a distinguished speaker seminar series, and will invite one distinguished speaker each semester to deliver a lecture related to congestion mitigation strategies. The ISC will solicit nominations from all faculty, staff and students, and will select one speaker per semester. Criteria for selection will include speaker credentials and experience in transportation, and relevance of the lecture topic to the CMS theme. The ISC will attempt to invite one person from academia and one person from industry each year. The seminar will be announced university-wide, and all TRC-affiliated faculty students and staff will be expected to attend. An attendance sheet will be circulated at these events, to document participation by various groups across the University.

#### **II.C.3.e Travel to Conferences**

The TRC has traditionally encouraged all students participating in research activities to attend professional conferences and to present and publish their work. Each year the TRC has been able to send several students to the TRB Annual Meeting in Washington DC, by fully or partially funding their travel through the Southeastern Transportation Center (STC – the UTC for Region IV). The STC will continue to support students' travel to the TRB Annual Meeting; however, the CMS will provide additional travel funding for graduate students who have an accepted paper or presentation at a professional conference within the US.

### **II.C.4 REQUIRED ACTIVITIES**

#### **II.C.4.a Multidisciplinary Course Work and Student Participation in Research**

The TRC has traditionally emphasized interdisciplinary education, and students pursuing transportation-related degrees have taken courses in several departments outside their main focus area. The CMS will continue to support multidisciplinary coursework within all existing degree programs.

Also, transportation students have been strongly encouraged to participate in research activities. The vast majority of graduate students affiliated with the TRC also work on an externally funded research project as well as on their thesis or dissertation. There have also been several undergraduate students who have been recruited to assist in research projects. The CMS will continue to strongly encourage undergraduate

and graduate student participation in research. The students affiliated with the CMS will work under the direct supervision of a designated faculty (usually their advisor) and will have the opportunity to interact with project sponsors, as well as with other students in the program.

#### **II.C.4.b.1 Outstanding Student of the Year**

The CMS will choose one outstanding student of the year. Applications will be invited annually, and will be evaluated by the ISC. The award for the CMS Student of the Year will be \$1000 and the costs for the winner to attend an award ceremony in Washington, DC, during the annual meeting of the Transportation Research Board (TRB). The winner will be publicized on the CMS website and the newsletter.

### **II.C.5 PERFORMANCE INDICATORS**

CMS staff will collect and report information necessary to track performance measures 5 and 6, by collecting data directly from UF departments with transportation-related expertise, as well as from individual faculty involved in transportation-related research.

## ***II.D Human Resources***

**Human Resources Goal:** an increased number of students, faculty, and staff who are attracted to and substantively involved in the undergraduate, graduate, and professional programs of the Center.

### **II.D.1 BASELINE MEASURES**

The information called for as Baseline Measures 7, 8 and 9 is provided in Appendix A. Currently, UF offers one master's degree program and one doctoral degree program in transportation (in CCE). Other departments offer degrees with a specialty in transportation, however these are currently not formal transportation degree programs. In reporting these baseline measures, all degree programs that have a transportation specialty (i.e., CCE, ISE, OT, and URP), are included. For the year 2006, there were 18 students enrolled in these master's programs and 26 students in doctoral programs. At the same time there were 11 master's degrees and 8 doctoral degrees with a transportation specialty awarded.

### **II.D.2 HUMAN RESOURCES PROGRAM OUTCOME**

One of the major objectives of the center is to increase the number and quality of undergraduate and graduate students studying transportation at UF. This will be achieved by inviting an increasing number of students, faculty, and staff, to be involved in the research and educational activities of the CMS. The expected outcome is an increase in the number and quality of undergraduate students selecting the

transportation track in the CCE Department, an increase in the number and quality of graduate students studying transportation, and an increase of graduate students from various disciplines getting involved in transportation research. At the end of the grant we expect to have an increased number of students in the program, as well as an increased number of graduates in transportation from the University of Florida.

### **II.D.3 PLANNED ACTIVITIES**

The CMS will undertake efforts to promote transportation study and research to undergraduates, graduate students, and professionals. The major activities that the Center will undertake to bring about the described Program Outcome are listed below.

#### **II.D.3a Internships for Undergraduate Students**

The Transportation Research Internship Program (TRIP) which is being offered this coming summer for the first time aims to provide undergraduates an exciting opportunity to learn about transportation engineering and to participate in cutting-edge research projects along with faculty and graduate students at the Center. The experience will be valuable to students interested in pursuing advanced studies and/or a career in the field of transportation engineering. Several interns will be recruited to participate in this program based on a competitive selection process. The internship will be for a period of 10 weeks at 20-30 hours per week. Each intern will contribute extensively to one or more of the on-going projects at the Center.

Each intern will be supervised by a faculty advisor and will be expected to work in close collaboration with Masters and PhD students in the CMS. Several seminars will also be organized to introduce the interns to the different areas of transportation engineering in an informal and interactive setting. Seminars will be offered by TRC faculty and transportation professionals, as discussed in Section II.C.3.c. At the end of the internship period, the interns will be required to make oral presentations and submit research reports describing their projects.

#### **II.D.3b Graduate Education for Professionals**

The existing UF EDGE program (Electronic Delivery of Graduate Engineering) gives full-time working professionals around the world the opportunity to take graduate classes for credit, and earn their Master of Science degree in Civil and Coastal Engineering. There are currently two transportation courses offered through EDGE: Traffic Engineering, and Traffic Flow Theory. The CMS will investigate the feasibility of offering additional transportation courses through this program. It will also investigate the feasibility of offering a Transportation-focused graduate degree, encompassing various aspects of transportation, including land use issues, transportation planning, and human factors.

### **II.D.4 Performance Indicators**

CMS staff will collect and report information necessary to track performance measures 7, 8, and 9 by collecting data directly from the UF academic departments involved in the CMS, and confirming the results with CMS-affiliated faculty.

## ***II.E Diversity***

**Diversity Goal:** students, faculty, and staff who reflect the growing diversity of the U.S. workforce and are substantively involved in the undergraduate, graduate, and professional programs of the Center.

### **II.E.1. BASELINE MEASURES**

RITA no longer requires the collection of performance measurements regarding diversity, therefore no such data will be reported.

### **II.E.2 Diversity Program Outcome**

The outcome of the diversity program will be a more diversified group of students, which will be an impetus to attract additional students from underrepresented backgrounds, and the development of a group of highly qualified transportation educators and researchers that will directly benefit the state of Florida and the nation.

### **II.E.3 Planned Activities**

A key component of the diversity program is the recruitment and retention of high quality students from diverse backgrounds to the CMS. The ISC will develop a process for identifying, recruiting, and retaining talented students from underrepresented backgrounds into transportation. Such students will be identified through various UF-based organizations, such as the Office of Graduate Minority Programs (OGMP), as well as through contacts with faculty at other universities in Florida and nationwide.

Undergraduate students from diverse backgrounds will be invited to participate in the CMS summer internship program (see Section II.D.3.a.) For potential graduate students, a key aspect of the recruiting process will be the annual Graduate Recruitment Weekend, sponsored by the College of Engineering (COE) and the CCE. During this weekend, prospective graduate students are invited to meet with faculty and students, and visit the campus. All highly qualified students with an interest in transportation will be invited to visit UF and the CMS, and to learn more about the academic programs, facilities, and financial assistantship opportunities. Throughout the recruitment process the ISC, through one of its members, will maintain close contact with each applicant, providing information, responding to questions, and assisting them throughout the process. The CMS will maintain a database documenting the entire recruitment effort for each potential applicant identified. This database will be used as both a monitoring and an evaluation tool. To retain students to successful completion of their degrees, the ISC will closely monitor their progress

toward their degree objective, will solicit their input regarding CMS activities and overall academic preparation.

#### **II.E.4 Performance Indicators**

RITA no longer requires the collection of performance measurements regarding diversity, therefore no such data will be reported.

### ***II.F Technology Transfer***

**Technology Transfer Goal:** availability of research results to potential users in a form that can be directly implemented, utilized, or otherwise applied.

#### **II.F.1 BASELINE MEASURES**

The information called for as Baselines 10 and 11 is provided in Appendix A. The values for these baseline measures are 0 as the CMS is a new center.

#### **II.F.2 TECHNOLOGY TRANSFER PROGRAM OUTCOME**

It is envisioned that the CMS will use existing mechanisms, coupled with new approaches, to disseminate research results to potential users. Mechanisms currently in place for disseminating research results include short courses, conference presentations, journal publications, as well as the *McTrans* catalog and the T<sup>2</sup> newsletter. The CMS will leverage these existing mechanisms to facilitate research projects, and to disseminate information to the appropriate constituencies.

Regarding new tools, an electronic newsletter summarizing center activities will be developed semi-annually and disseminated to the transportation community, summarizing all CMS activities, and providing information on availability of completed project reports, research papers, and presentations. A technology transfer-related component will be required of all research projects to ensure research results will be implemented as appropriate. A conference will be organized annually in conjunction with the EAB meeting, to provide the opportunity to UF researchers to share their experiences and findings with the transportation community. In addition, a new website will be created to provide up-to-date information on center activities, research progress, and to post research reports and findings.

#### **II.F.3 PLANNED ACTIVITIES**

##### **II.F.3.1 Short courses and Software Products**

The University of Florida has several continuing education programs in transportation through T<sup>2</sup> and *McTrans*. The CMS will work closely with T<sup>2</sup> and *McTrans* staff to develop courses relevant to congestion mitigation that may be identified in consultation with the ISC and/or the EAB. Furthermore, *McTrans* will assist in the dissemination of software developed by CMS projects, as well as in the development and dissemination of courses related to software usage.

### **II.F.3.2 Newsletter**

In addition to leveraging the *McTrans* and T<sup>2</sup> newsletters, the TRC plans to issue its own electronic newsletter, which will target primarily academia and transportation professionals, while focusing on research findings and new technologies for congestion relief. The newsletter will be distributed to CUTC members, state and federal departments of transportation, regional and metropolitan planning organizations, partner organizations, collaborators, and others. The newsletter will be published semi-annually and will provide information on completed and on-going research. A new website will be created for CMS (see Section II.F.3.a.1) which will include the full text of research reports, and information regarding on-going projects, upcoming events such as conferences, short courses, and seminars, and information for prospective students.

### **II.F.3.3 Annual Conference**

An annual conference will be organized in conjunction with the EAB meeting, to present research results and discuss research procedures with colleagues and representatives from private and public agencies around Florida and nationwide. This conference will serve as an additional avenue for dissemination of research results and will also provide the opportunity for UF researchers to obtain input from the transportation community regarding various center research and educational activities.

### **II.F.3.4 Other Dissemination Mechanisms**

*McTrans* has been distributing its newsletter nationwide since 1986 to report new developments in transportation research, and particularly in transportation-related software. The circulation of the newsletter is about 30,000, and the electronic version is also made available online at <http://mctrans.ce.ufl.edu/newsletters/>. The *McTrans* catalog will help publicize requests for information, and will also disseminate relevant research findings from CMS projects. The T<sup>2</sup> 's quarterly newsletter reaches over 11,000 transportation professionals and decision-makers in the state. The CMS will work closely with T<sup>2</sup> staff to disseminate information relevant to congestion mitigation as appropriate. In addition, T<sup>2</sup> has several extensive listserves of employees in the transportation field which will be used to disseminate information about upcoming training opportunities as well as other information.

### **II.F.3a Required Activities**

#### **II.F.3.a.1 Website**

The CMS will develop and maintain an up-to-date Internet home page which will contain all information required by the UTC reporting requirements. Materials to be posted include the final approved strategic plan of the center, upcoming events, list of faculty, staff and students, research reports, proposal solicitations, educational activities, etc. The site will also provide information for prospective students.

#### **II.F.3.a.2 Meetings**

CMS representatives will participate in CUTC, USDOT, RITA and other UTC related meetings as appropriate, will participate in meetings with DOT experts on high-priority topics, and will provide expert advice to USDOT on technical or education topics.

### **II.F.4 PERFORMANCE INDICATORS**

CMS staff will collect and report information necessary to track performance measures 10 and 11. The information will be collected using input from the ISC, Principal Investigators and CMS-affiliated faculty.

## *Section III – Management Approach*

This section of the Strategic Plan sets forth the Center Director's management plan for meeting all the requirements of the grant and managing the personnel and activities of the Center.

### ***III.A Institutional Resources***

UF has the institutional resources necessary to provide administrative, financial, and technical management support for all CMS activities. First, the center will be housed within CCE, which has significant experience in grant administration. In 2005-2006 CCE administered approximately 170 research projects worth \$28 million, with total annual expenditures in excess of \$15 million. CCE has the administrative, clerical, editorial, and fiscal staff necessary to ensure proper management of the CMS funds and to produce high-quality, professional program results. Dr. Lily Elefteriadou will serve as the center's director, and with the assistance of TRC and CCE staff will monitor the expenditures and activities of the center.

UF also has excellent research support infrastructure. It has first-rate conference and distance education facilities, including a hotel and conference center adjacent to its campus. The UF EDGE facilities may be used for teleconferencing, and for disseminating information and lectures via compressed video and the World Wide Web. The Marston Science Library is located centrally on the campus and has holdings exceeding 2.4 million cataloged volumes and more than 2.7 million microfiche units. The library provides students with ready access to several national and international computerized literature and current research databases. UF researchers have access to extensive computing facilities and technology, including computer terminals, microcomputers, digitizers, plotters, and printers. Five major computer facilities are also available on campus with capabilities for GIS, remote sensing analysis, graphics, statistical analyses, and large-scale model development. The university is in Phase III of efforts to complete a High Performance Computing (HPC) Cluster on campus. The cluster will be dedicated to research, development and simulation efforts, and has recently demonstrated a performance score of 2.975 TeraFLOPS using 206 nodes with 832 central processing units. Current NSF-sponsored research in the ISE department involves exploiting HPC in large-scale transportation network modeling.

CCE has approximately 135,000 square feet of laboratory, teaching, office, and shop space. CCE shares research facilities with other departments and has joint access to facilities such as the Soil and Water Science Laboratory, the Major Analytical Instrumentation Center, the Computer Visualization Lab, and the North Florida Regional Computer Center. The TRC has several laboratory and research facilities that assist with its educational and research programs. The computer facilities at TRC provide faculty, staff and students with valuable experience in the use of advanced computer technology in the transportation field. The computer laboratory is equipped with 12 powerful personal computers for advanced applications, including traffic simulation packages, various traffic and transportation software, and statistical packages.

One unique feature of the TRC facilities is access to transportation-related software. The center has access to all of the software distributed by *McTrans*.

*McTrans* serves as a comprehensive software support center for the transportation engineering and planning community. *McTrans* distributes software packages to transportation engineers and planners worldwide, and supports the software in a wide variety of applications. *McTrans* has worked very closely with the Federal Highway Administration (FHWA) to ensure support for several software programs, such as TSIS/CORSIM, IDAS, QuickZone, DYNASMART-P, SpecWizard, Turbo Architecture and others. *McTrans* has worked with the Transportation Research Board (TRB) Highway Capacity and Quality of Service (HCQS) committee since 1987 to update the Highway Capacity Software (*HCS+*) package to implement the Highway Capacity Manual (HCM) procedures accurately, and continues to play a role in disseminating information to HCM users. *McTrans* has also worked with FDOT to provide training and now distributes three planning software applications within the *HCS+* package. The *McTrans* newsletter is published twice annually and reaches over 30,000 members, including about 3,000 individuals outside the U.S. The website features current transportation software information and an online catalog of over 500 transportation-related software programs.

TRC's Traffic Signal Control Laboratory contains numerous advanced pieces of equipment related to signal control. Such equipment includes several AUTOSCOPE™ video detection systems, several traffic signal controllers (both NEMA and 2070 types), along with supporting signal control cabinet hardware and signal heads, and several Controller Interface Device (CID) units (for performing hardware-in-the-loop simulation studies). In this lab, we have the ability to conduct full-intersection signal control demonstrations and tests. The laboratory is equipped with video data collection and processing facilities, including numerous video cameras and recording devices.

The TRC has a complete set of standard traffic data collection equipment for use in field studies, including traffic classifiers, stopwatches, measuring wheels, a speed radar gun, video cameras and recorders, and portable power supplies. TRC has several AUTOSCOPE™ video detection systems by Econolite/ISS, which can be used to automatically extract traffic data (such as speeds and vehicle counts) from cameras, and recorded video. The TRC also has available its own vehicle (a Honda Pilot) for performing on-the-road data collection. This vehicle is equipped with multiple video cameras and video recording equipment for capturing multiple fields of view from within the vehicle. The TRC has various software to facilitate communications with other organizations using internet-based video conferencing.

The National Older Driver Research and Training Center (NODRTC) was established in 2000 to help older persons maintain their safe driving ability as long as possible, and to develop satisfactory alternatives for those who can no longer drive. NODRTC receives funding from FHWA, NHTSA, and the FDOT. In one of their recent projects for FHWA, NODRTC researchers tested older driver performance on roadway design features, to develop guidelines for making roadways safer for older drivers. NODRTC maintains a high-fidelity driving simulator (STISIM Drive Model 500) interfaced with a compact automobile. This simulator provides a large, forward-visual field-of-view (FOV) of 180 degrees and displays virtual objects behind the car as well. The wide FOV is accomplished by connecting three flat screens. The STISIM system is interfaced with a 1997 Dodge Neon to enhance realism. In the car, the "driver" operates normal accelerator, brake, and signal and steering controls with the corresponding visual scene responding accordingly. The

apparent longitudinal and lateral movement allows the driver to speed up or slow down, come to a halt, steer laterally, including making lane changes or changing direction at intersections. Road-feel is also captured via a low-frequency audio woofer and amplifier that provide engine, transmission and road noise at varying intensities and frequencies.

The Geo-Facilities Planning and Information Research Center (GeoPlan), housed in URP, was established in 1984 as a response to the need for a teaching and research environment in geographic information systems (GIS). GeoPlan's research areas include software development and application of GIS technology in urban and regional planning. The GeoPlan Center is the largest repository of geographic information data in the state of Florida. The Florida Geographic Data Library (FGDL) contains over 350 GIS data layers, including data on Land Use, Hydrology, Soils, Transportation Facilities, Political Boundaries, Environmental Quality, Conservation, Census, and more, that is available by county and/or statewide.

The Supply-Chain and Logistics Engineering Center at the University of Florida is an interdisciplinary center that encourages joint research and applied projects among faculty from several departments. The center was founded in 2000 and is located in ISE. Dr. Ravindra K. Ahuja and Dr. Joseph Geunes serve as the Center's Co-Directors. Dr. H. Edwin Romeijn and Dr. Elif Akçali serve as Associate Directors. The center seeks to foster close collaboration with industry and government partners to promote fundamental research, develop innovative solutions for large-scale problems, and provide educational outreach in this area.

The Florida Transportation Technology Transfer (T<sup>2</sup>) Center has over 25 employees, including professional engineers, retired-FDOT-employees-turned-instructors, instructional-systems designers and workshop coordinators. Major Florida T<sup>2</sup> Center programs include the Local Technical Assistance Program (LTAP), the Florida Transportation Safety Training Program (FTSTP), the Product Demonstration Showcase (PDS), Pedestrian/Bicycle GIS Crash Map and Pedestrian/Bicycle Law Enforcement Training, the Safety Circuit Rider (SCR) Program and the Research Deployment Center for the Florida Department of Transportation (FDOT). In addition to training opportunities, the T<sup>2</sup> Center has a free lending library of publications, CDs, and videos plus a free, quarterly newsletter with a state-based mailing list of well over 11,000. The success of the UF LTAP program was recognized by the FHWA International Programs Office through support in outreach to the broader international transportation community. The Florida T<sup>2</sup> Center was chosen by FHWA to "twin" with KwaZulu-Natal, South Africa in 2001. KwaZulu-Natal representatives have visited offices of FDOT and the T<sup>2</sup> Center on several occasions. In the past five years, the Florida T<sup>2</sup> Center has conducted over 2,600 seminar/workshops with over 48,000 participants. The courses range from one to five days and provide pertinent information and technical knowledge for public works and transportation professionals. The center also organized several conferences, including the National Performance Measurements Workshop – for FDOT, (Orlando, FL, December 2002), and two international symposia for Transportation Technology Transfer (St. Petersburg, Florida, 2001 and 2006).

The CCE department currently has an advisory committee comprised of 24 members that represent a variety of public and private agencies or firms. This board meets twice per year (fall and spring semesters). One of the primary responsibilities of the board is to provide the department chair and center directors with feedback on the appropriateness of the program's educational objectives. They do this through a review of the undergraduate curriculum, discussions with faculty, discussions with students, and through their own

assessment of the current needs of the profession. Selected members of the CCE advisory committee may serve on the CMS' advisory board.

### ***III.B Center Director***

Dr. Lily Elefteriadou will serve as the center's Director, and will have overall responsibility for all aspects of the center's operation. She is a tenured faculty member in the CCE department, and the Director of the TRC. She has over 16 years of experience in transportation research and education and has been a faculty member for the past 12 years. During 2003-2004 she served as the Interim Director of the Pennsylvania Transportation Institute (PTI) at Penn State University. At that time she also served briefly as co-principal investigator for the Mid-Atlantic Universities Transportation Center (MAUTC), before joining the University of Florida in July 2004.

As the center's Director, Dr. Elefteriadou will be responsible for the project's fiscal and administrative management. She will serve as the chair of the Internal Steering committee and as the point of contact for RITA/US DOT officials. She is expected to devote approximately 35% of her time to Center activities. Dr. Elefteriadou will be assisted by Ms. Ines Aviles-Spadoni, the CMS Center Manager ), as well as by the ISC, and the EAB.

### ***III.C Center Faculty and Staff***

The CMS Center Manager (to be named later) will serve as the center's coordinator, assisting Dr. Elefteriadou with the management and oversight of the center. This person will be responsible for the center's website, the newsletter publication and dissemination, and the support of center outreach operations. He/she will devote approximately 80% of his/her time to center activities.

Other staff members who will devote significant time to center activities are Ms. Dona Moss, the Grants Specialist at the CCE department who maintains budget and expenditure information, Mr. Bill Heitman, the Director of Administrative Services who provides support for administrative activities, and Ms. Nancy Been, the Graduate Coordinator, who directs recruiting efforts and maintains students' academic records for the CCE department.

Dr. Elefteriadou will coordinate all CMS activities with the ISC, which is expected to meet once a month or more often if needed, to ensure that the center's resources are appropriately managed, research projects are completed as scheduled, and students are progressing toward their targeted degrees.

### ***III.D Multiparty Arrangements***

N/A

### ***III.E Matching Funds***

Grant funds shown in the UTC Grant Agreement as authorized by U.S.C. 5505 or 5506 are subject to a 100% non-Federal match; CMS will describe the prospective amount[s] and source[s] of the Center's matching funds.

#### **III.E.1 ELIGIBILITY AS MATCHING FUNDS**

The CMS will follow the rules governing the use of in-kind and cash contributions as matching funds as set forth in the most recent revision of OMB Circular A-110. Matching funds may be cash or in-kind, and will be used to accomplish program objectives and the purpose of the grant and will be fully documented and carefully accounted for in the CMS records.

#### **III.E.2 SPECIAL RULE FOR UTC PROGRAM**

The non-Federal share of Center costs may include funds provided to a recipient under section 503, 504(b) or 505 of title 23, United States Code.

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## ***Section IV – Budget Details***

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The budget plan for the first year of the Center's operation is shown in Figure 2. The budget reflects the sum of: (1) the amount of Federal funding stated in the Grant Agreement, plus (2) at least an equal amount of non-Federal matching funds. Appendix B includes the detailed calculations for each of the items listed in Figure 2. The Grant Year will begin July 1<sup>st</sup>, 2007 and end June 30<sup>th</sup>, 2008.

Name of Grantee: Center for Multimodal Solutions for Congestion Mitigation

Grant Year: May 1<sup>st</sup>, 2007 thru April 30<sup>th</sup>, 2008  
 (Date) (Date)

CATEGORIES	Budgeted Amount	Explanatory Notes
Center Director Salary	\$51,280	Assumed to be 35% of nine-month salary
Faculty Salaries	\$390,000	
Administrative Staff Salaries	\$50,000	CMS Center Manager salary
Other Staff Salaries	\$0	
Student Salaries	\$336,121	
Staff Benefits	\$169,256	
<b>Total Salaries and Benefits</b>	<b>\$996,657</b>	
Scholarships/Tuition	\$275,902	
Permanent Equipment	\$20,000	Written permission will be obtained by RITA prior to the purchase of permanent equipment more than \$5,000 per unit cost.
Expendable Property, Supplies, and Services	\$16,910.00	
Domestic Travel	\$30,000.00	Includes travel costs for EAB members
Foreign Travel	\$0	
Other Direct Costs (Specify)	\$0	
<b>Total Direct Costs</b>	<b>\$1,339,469</b>	
F&A (Indirect) Costs	\$293,731	
<b>TOTAL COSTS*</b>	<b>\$1,633,200</b>	
Federal Share	\$816,600	
Matching Share	\$816,600	

\*Includes Federal and Matching Shares

Figure 2. CMS Budget Plan for Year 1



## Appendix A- Baseline Measures

### Research Selection

1. Number of transportation research projects selected for funding.

\_\_\_\_\_0\_\_\_\_\_

1a. Number of those projects that you consider to be: basic research \_\_\_0\_\_\_, advanced research \_\_\_0\_\_\_, and applied research \_\_\_0\_\_\_. Projects may be included in more than one category if applicable.

2. Total budgeted costs for the projects reported in 1 above.

\$ \_\_\_\_\_0\_\_\_\_\_

### Research Performance

3. Number of transportation research reports published.

\_\_\_\_\_0\_\_\_\_\_

4. Number of transportation research papers presented at academic/professional meetings.

\_\_\_\_\_0\_\_\_\_\_

### Education

5. Number of courses offered that you consider to be part of a transportation curriculum. Report courses shown in the university course catalog as being offered, whether or not they were conducted during the academic year being reported.

Undergraduate: \_\_\_\_\_7\_\_\_\_\_

Graduate: \_\_\_\_\_19\_\_\_\_\_

6. Number of students participating in transportation research projects. Count individual students (one student participating in two research projects counts as one student).

Undergraduate:             13        
Graduate:                   55      

### Human Resources

7. Number of advanced degree programs offered that you consider to be transportation-related.

Master's Level:             4        
Doctoral Level:             4      

8. Number of students enrolled in those transportation-related advanced degree programs.

Master's Level:            18       
Doctoral Level:            26     

9. Number of students who received degrees through those transportation-related advanced degree programs.

Master's Level:            11       
Doctoral Level:             8     

### Technology Transfer

10. Number of transportation seminars, symposia, distance learning classes, etc. conducted for transportation professionals.

      0     

11. Number of transportation professionals participating in those events.

      0

# Appendix B- Budget Calculations

**PROPOSED BUDGET  
UNIVERSITY OF FLORIDA  
CIVIL & COASTAL ENGINEERING**

**Year 1  
Revised**

**3-Oct-07**

**PRINCIPAL INVESTIGATOR:  
Dr. Lily Elefteriadou**

**SPONSOR: US Department of Transportation**

**CONTRACT/GRANT NO:**

**DATES: 12 months  
05/01/07 - 04/30/08**

**TITLE: Tier 1 UTC Program Grant**

	% Time	Period Covered	Total Requested
<b>A. SALARIES:</b>			
Academic (Name):			
L. Elefteriadou	35%	12 months	\$51,280
TBA Faculty 1	30%	12 months	\$27,000
TBA Faculty 2	30%	12 months	\$27,000
TBA Faculty 3	30%	12 months	\$42,000
TBA Faculty 4	30%	12 months	\$42,000
TBA Faculty 5	30%	12 months	\$42,000
TBA Faculty 6	30%	12 months	\$42,000
TBA Faculty 7	30%	12 months	\$42,000
TBA Faculty 8	30%	12 months	\$42,000
TBA Faculty 9	30%	12 months	\$42,000
TBA Faculty 10	30%	12 months	\$42,000
USPS Personnel (Name):			
Admin Asst	100%	12 months	\$50,000
<b>TOTAL SALARIES</b>			<b>\$491,280</b>
<b>B. OTHER PERSONNEL SERVICES (OPS):</b>			
Graduate Students (19)			\$336,121
<b>TOTAL OPS</b>			<b>\$336,121</b>
<b>C. FRINGE BENEFITS:</b>			
19.18% ORP Retirement			\$84,638
18.60% FRS Retirement			\$9,300
\$787.60/per man month insurance			\$41,113
0.22% Term Life Insurance			\$1,081
.98% Worker's Comp.			\$3,294
Graduate Student Insurance			\$29,830
<b>TOTAL FRINGE BENEFITS</b>			<b>\$169,256</b>
<b>TOTAL SALARIES, OPS &amp; FRINGE BENEFITS</b>			<b>\$996,657</b>
<b>D. TOTAL PERMANENT EQUIPMENT:</b>			<b>OCO</b>
			<b>\$20,000</b>
<b>E. TOTAL OPERATING EXPENSES:</b>			
Tuition			\$133,000
Materials & Supplies			\$16,910
Travel, Domestic			\$30,000
Fellowships			\$142,902
<b>EXPENSES</b>			<b>\$322,812</b>
<b>F. TOTAL DIRECT COSTS:</b>			<b>\$1,339,469</b>
<b>G. TOTAL INDIRECT COSTS:</b>			
	46.5%	MTDC (USDOT)	<b>\$219,495</b>
	10.0%	TDC (FDOT)	<b>\$74,236</b>
<b>H. TOTAL BUDGET:</b>			<b>\$1,633,200</b>