



STRATEGIC PLAN

University of Memphis Center for Intermodal Freight Transportation Studies (CIFTS)

**University Transportation Centers Program
U. S. Dept of Transportation
Research and Innovative Technologies Administration**

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Center for Intermodal Freight Transportation Studies (CIFTS)

Section I – Program Overview

By its very nature, freight transportation is intermodal, and most movements include more than one mode. The major flow of commodities from the Pacific Rim arrive via container ship at western ports, are transloaded to rail to the heartland of the country, and are distributed at intermodal terminals by truck to warehouses or to final destinations. In addition, other movements may include the inland waterway system, air transportation and operations at terminals where goods are transferred between modes. These complex systems involve intricate webs of private and public providers, moving goods as well as information on the status, location and description of the commodities. This entire system of logistics is accomplished while focusing on safety and security. As stated in *Framework for a National Freight Policy* (4), “The United States freight system is a national system, not a Federal system, composed of a vast array of inter-connected public and private sector institutions and organizations.”

The University of Memphis is a metropolitan research university located at the hub of the Lower Mississippi Delta’s intermodal freight transportation network. The region includes Kentucky, Tennessee, Alabama, Mississippi, Arkansas and Louisiana, representing an important complex of transportation and logistics resources consisting of air, water, road, rail, pipeline and telecommunications.

The City of Memphis, known as “North America’s Distribution Center”, is a focal point for intermodal transportation. Strategically positioned with five Class 1 railroads, crossed by several Interstate highways, and home to the world’s largest air cargo airport and the nation’s fourth busiest inland waterway port, it is a major intermodal hub. Goods of all types ranging from small, high-value products such as computer components and medical devices shipped by air, to low-value bulk commodities like coal, grain, and petroleum shipped via barge, either have origins or destinations in the region or pass through Memphis. The two major western railroads, BNSF and Union Pacific have their eastern terminals in the Memphis region where they interface with the Norfolk Southern, CSX and Canadian National railroads. The Union Pacific has a major intermodal terminal in eastern Arkansas and both the BNSF and the Canadian National have major intermodal terminal expansions underway in Memphis. I-55 and I-40 cross at Memphis. Both carry substantial truck volumes, servicing the entire region as well as the nation as a whole. The I-69 NAFTA corridor, connecting Canada and Mexico, will pass through the region and become an important transportation asset. Plans are also underway to upgrade other major arterials (US 78 and US 61) connecting Memphis to the region.

The world headquarters of Federal Express is located in Memphis, and its presence has spawned a vibrant warehousing-distribution industry. Global companies such as Nike and Williams-Sonoma as well as bio-medical firms like Medtronic and Wright Medical have established major facilities in Memphis. Located to the west in neighboring Arkansas is a significant collection of trucking firms and the headquarters of Wal-Mart, a leader in logistics and supply chain management innovation.

To the east, I-24, I-65, I-75 and I-81 carry large volumes of truck traffic within and through the State of Tennessee and the eastern United States. Nissan and Saturn operate major assembly plants, and Nissan recently moved its North American headquarters to the Nashville area. Major north-south routes served by CSX and Norfolk Southern have national importance, and Tennessee has an extensive network of short line railroads. The Tennessee and Cumberland Rivers link Tennessee and adjacent states with the inland waterway system.

While housed at the University of Memphis, the Center for Intermodal Freight Transportation Studies (CIFTS) will include Vanderbilt University as a principal partner. Both universities have established programs in transportation. Both institutions offer course work at the undergraduate and graduate levels in Civil Engineering with transportation emphasis, leading to BS, MS and PhD degrees. Both have on-going transportation research programs that have focused on intermodal issues. Most importantly, they offer complementary skill sets that collectively comprise a unique talent base for conducting innovative intermodal transportation research, education and technology transfer.

I.A Glossary

ASHTD	Arkansas State Highway and Transportation Department
BNSF	Burlington Northern- Santa Fe Railroad
CIFTS	Center for Intermodal Freight Studies
CN	Canadian National Railway
CSX	CSX Corporation
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
MARAD	U.S. Maritime Administration
MDOT	Mississippi Department of Transportation
MPO	Metropolitan Planning Organization
NS	Norfolk Southern Railroad
RITA	Research and Innovative Technologies Administration
TDOT	Tennessee Department of Transportation
TRB	Transportation Research Board
UM:	University of Memphis
UP	Union Pacific Railroad
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
UTC	University Transportation Center
VU:	Vanderbilt University

I.B Center Theme

The theme of CIFTS is intermodal freight transportation. Our mission is to address critical issues affecting the planning, design and operation of the nation's intermodal freight transportation system with an emphasis on the water, rail, air and highway freight network of the lower Mississippi River delta region. Through a comprehensive program of research, education and technology transfer, CIFTS will pursue work in five primary areas: 1) Information Technology (data mining/analysis and software systems development); 2) Network Evaluation (supply chain/network optimization and congestion); 3) Risk Management (safety, security, environmental), 4) Infrastructure Analyses (design and network); and 5) Impact Analyses. Within these areas, emphasis will be placed on projects that address issues related to international freight, natural and man-made hazards, and dangerous cargo. The Center is grounded in the belief that an all-encompassing approach that includes infrastructure, technology and policy considerations is necessary to effectively advance the transportation network that supports our nation's economy.

The importance of maintaining and expanding the freight transportation system is articulated in the *Strategic Plan of the U.S. Department of Transportation* (1). The plan lists five strategic objectives: safety, mobility, global connectivity, environmental stewardship and security, all of which are key considerations in the design and operation of intermodal freight transportation systems. The proposed activities of CIFTS support pursuit of these objectives. For example, our focus on issues associated with freight congestion, security, safety and the impacts of increased freight flows on the transportation system from international trade are all highlighted areas of CIFTS concern. The organizations responsible for providing and maintaining the infrastructure, state DOTs, the railroads, the U.S Army Corps of Engineers, barge companies, etc., share in the need to address these issues.

The proposed activities of the Center also support the themes in the report of the National Highway Research and Technology Partnership entitled *Highway Research and Technology: The Need for Greater Investment* (2). Among the issues identified in this report are the importance of information needs and requirements, as well as in addressing intermodal interfaces and efficiencies.

The *U.S. Department of Transportation Research, Development, and Technology Plan* (3) highlights many areas that will be supported with the efforts of the Center. These include information systems for

the movement of hazardous materials, enhanced system management information systems and support for the DOT National Freight Action Plan. The focus on hazardous materials transportation is one of the priority areas highlighted in the Federal Railroad Administration's Five Year Strategic Plan for Railroad Research Development, and Demonstrations.

To the greatest extent possible Center activities will support the research priorities of the Federal Transit Administration as identified in the FTA Strategic Research Plan.

Both institutions, the University of Memphis and Vanderbilt University, have on-going transportation education and research programs. Both have been active in intermodal transportation and have partnered with the public and private sectors in the past. The interdisciplinary approach that will link engineering and business (network optimization, economics, management information systems) will yield practical results that will benefit the region and the nation. Proper budgeting and tracking systems will separate the two programs.

1C. Center Director's Summary

Our vision is to develop a sustainable transportation center which will be a regionally and nationally recognized leader in developing solutions to intermodal transportation systems problems through research, education and technology transfer activities. CIFTS will be an incubator in which intermodal transportation stakeholders in the private and public sectors will work cooperatively on issues supporting the vision articulated in the *Framework for a National Freight Policy* (6), which is " ... to ensure the efficient, reliable, safe and secure movement of goods (which) supports the nation's economic growth while improving environmental quality."

A key to attaining CIFTS sustainability will be developing partnerships with government agencies, transportation providers, and others in the private and public sectors to expand the Center's activities beyond those funded by the UTC Program. This is especially critical when addressing the freight transportation system, given the complexities associated with interactions among all parties.

At the end of the grant period, CIFTS will be regionally and nationally recognized in the area of intermodal transportation. Based on the research that has been performed and the programs that have been developed, the Center will be known for its expertise and contributions to solving problems associated with goods movement and logistics. CIFTS will have developed a strong interdisciplinary education program, providing graduates to the profession. Moreover, the University of Memphis and Vanderbilt University will reach out to other educational institutions, government agencies and businesses to cooperatively address intermodal issues. Through our technology transfer activities, we will offer sponsored seminars and other programs on topics related to intermodalism. We will also develop and/or participate in programs focused on workforce development at several levels, including K-12 and preparation of skilled workers for the logistics sector of the economy.

Section II – Program Activities

II.A Research Selection

Research Selection Goal: To develop a comprehensive research program that focuses on solving high priority intermodal transportation problems.

1. Baseline Measures

See Baseline Measures 1, 1a, and 2 in Appendix A

2. Research Selection Program Outcome

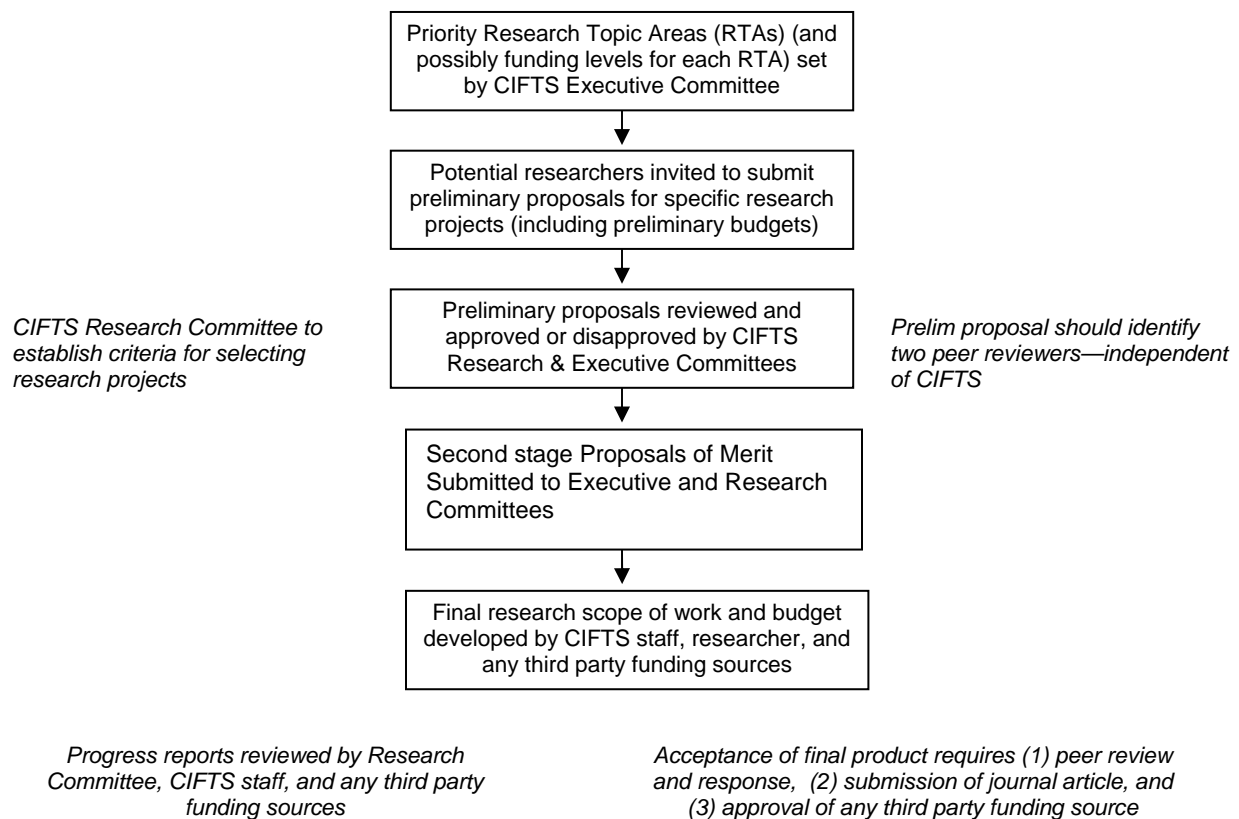
CIFTS will annually issue a request for proposals tied to its focus areas. Projects for which proposals will be solicited will be developed annually by the Center's Executive Committee. Some of these projects may be generated from the results of surveys administered to key stakeholders on intermodal transportation needs. Submitted proposals will be peer-reviewed by a Research Committee consisting of government officials, business leaders and transportation educators. Both basic and applied research projects will be considered.

3. Planned Activities

3.1. Required Activities

- The Center will prepare a Request for Proposals (RFP) document to be distributed to potential investigators at the University of Memphis and Vanderbilt University. Where the skills required to perform the project are not available within these institutions, other academic entities will be invited to respond. The RFP will include a summary of CIFTS' overarching focus and key areas of emphasis along with a detailed description of the solicitation's specific theme as defined by the Executive Committee. The RFP will include instructions on the research selection process and procedures for preparing proposals. It will also include a description of the factors considered in the proposal evaluation process, such as support of the Center's regional intermodal transportation theme; support of the national research, development, and technology priorities of the USDOT and its operating agencies; transportation impact of the proposed research; research duration; use of graduate and undergraduate students; budget; and availability of matching funds.
- A Research Committee will be established to review proposals. Membership on this committee will include government officials, the private sector and academia. This committee will conduct an initial screening of preliminary proposals (limited to one page) and identify proposals that are considered worthy of further development. Researchers whose proposals pass the initial screening will be asked to submit comprehensive proposals. These will be reviewed by the Research Committee. Proposals will be ranked in order of perceived importance and quality of the research plan. The Executive Committee will review the recommendations of the Research Committee and make final funding decisions (see below).
- The Center will include abstracts of funded proposals on its website and samples of successful proposals. RE: selection process below

CIFTS Process for Selecting and Approving Research



3.2. Recommended Activities

- CIFTS will reserve a portion of its research funding for work that is considered exploratory as well as for work that specifically addresses the Secretary of Transportation's congestion mitigation strategy related to freight traffic in urban areas.

4. Performance Indicators

The Center will maintain records pertaining to the research selection process, including records on the number of preliminary proposals submitted and the number selected for full proposal submission. In addition, records will be kept regarding the number of research projects selected for funding, the number of projects categorized as basic or applied research, and the total budgeted costs for these projects. The information will be summarized by the Center in accordance with the reporting requirements set forth by RITA.

II.B Research Performance

Research Performance Goal: To create an on-going process 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 intermodal transportation.

1. Baseline Measures

See Baseline Measures 3 and 4 in Appendix A.

2. Research Performance Outcome

Within each of CIFTS' focus areas, emphasis will be placed on research that contributes to the improvement and enhancement of regional intermodal freight transportation. Anticipated results are that the selected research will support the national research, development and technology priorities of the US DOT and its operating administrations, as articulated in The Department of Transportation Strategic Plan and other documents. It will also provide assistance to government agencies and private sector organizations within the region in addressing their critical needs.

3. Planned Activities

The research program will be designed to ensure that critical regional intermodal transportation needs are met. The Executive Committee will play a key role in monitoring this process. An annual intermodal transportation symposium will be held to provide a forum for defining research needs and monitoring the Center's research activities.

The dissemination of research results will be a primary consideration. In addition to research reports prepared at the end of each project, researchers will be encouraged to present their results at conferences and prepare papers for appropriate journals.

4. Performance Indicators

The Center will maintain records of the number of research reports prepared and the number of research papers presented at academic/professional meetings and those that are published in refereed journals. The information will be summarized in accordance with the reporting requirements set forth by RITA.

Other indicators to be monitored include productivity increases in the level of intermodal transportation research activity and how the funds provided by the grant are being leveraged to support an expanded research program.

II.C Education

Education Goal: To develop a multidisciplinary program of course work and experiential learning that develops a future work force to support intermodal transportation activities.

1. Baseline Measures

See Baseline Measures 5 and 6 in Appendix A

2. Education Program Outcome

In collaboration with the Education Committee, CIFTS education program will expand and enhance the existing transportation education offerings at the University of Memphis and Vanderbilt University. In addition, CIFTS will work to create joint programs in areas of interdisciplinary synergy within and between the two institutions and other key regional partners, covering engineering, business, law, and public policy.

Intermodal transportation topics will be integrated into the existing curriculum offerings at both institutions. The Center will play a key role in working with faculty from the appropriate institutions and departments to identify topics that may be included and courses where these topics may be seamlessly integrated with current materials. For example, freight planning concepts may be introduced into an existing engineering urban transportation planning course, or a business course in logistics may be enhanced by including coverage of infrastructure requirements at intermodal terminal facilities. This will encompass a faculty development component to broaden the expertise of faculty teaching in a traditional discipline such as engineering or business and focus on unique aspects of intermodal freight transportation within an interdisciplinary context.

New courses will also be developed to buttress existing transportation offerings. CIFTS will work with academic departments to develop these courses and to facilitate the integration and cross listing of courses into degree programs.

CIFTS will take a modular approach to course development to facilitate the delivery of courses at both institutions and to allow courses to be offered in alternative formats. For example, a course based on case studies of intermodal transportation could be jointly developed by the University of Memphis and Vanderbilt University, and offered as part of the normal academic calendar, summer transportation institute, or as an executive management (certification) program to graduate students and to the professional community. Moreover, this could be offered on-site or through distance-based learning using advanced communications technologies.

The development of a graduate-level cross-disciplinary major in transportation will be investigated. This cooperative venture will be focused on the needs of the region with the professional community consulted to aid in defining regional needs and developing the scope of the program. The Center will assist participating departments to develop the required curriculum.

The education program will also include a workforce development component, with the goal of increasing the number of trained, skilled workers and educated professionals in transportation and logistics. There is an industry-wide need for people at all levels - entry, skilled worker, management, etc. The competencies required may be linked to an educational/career pathway that includes certificates, associate degrees and baccalaureate degrees. Implementation of new technologies requires workers who have skills not only in transportation and logistics principles, but also in systems related to GPS, GIS, relational database management systems, and RFID principles. Workforce development programming will center on these areas of need. CIFTS has initiated preliminary discussions with potential partners in the region, and has also engaged in preliminary discussions with FHWA about regional needs. We will further refine these relationships upon convening CIFTS' education committee.

An additional aspect of workforce development lies in promoting transportation careers to K-12 students. The University of Memphis has a distinguished track record of offering summer engineering programming to middle and high school students. CIFTS will build on this foundation to explore opportunities for transportation career-specific programs or for enhancing transportation content coverage as a component of existing programs. CIFTS will partner with local school districts and area companies and foundations to secure commitments and matching financial support for this effort.

CIFTS will actively engage both graduate and undergraduate students in its research and education programs. Students will receive financial support to assist faculty with their research endeavors. Special efforts will be made to involve undergraduate students in the research program as part of this effort,

including exploring opportunities to develop an internship program with regional transportation industries and governmental agencies.

3. Planned Activities

- Assessment of all transportation-related courses at the University of Memphis and at Vanderbilt University to determine the coverage of intermodal transportation topics in existing courses. Based on the results of this assessment, a list will be prepared describing opportunities to introduce intermodal transportation topics into existing courses and to develop new courses focused on intermodal transportation. This will be vetted with the Education Committee with the outcome being a prioritization of curriculum enhancement. New course materials will subsequently be developed in a modular format that may be integrated into existing courses or operate as a new stand-alone course. The Education Committee will be one of the four committees, see Section III.B, providing direction to the Center. A matrix of representation for the committee will be developed including the University of Memphis and Vanderbilt University and both engineering and business. Also to be included will be work force development professionals, both at the federal level and also from local school districts/community colleges, as well as someone in the private sector responsible for training.
- Investigation of the development of a cross-disciplinary major in intermodal transportation consisting of courses provided by the Center institutions.
- Investigation of the development of a certification program in intermodal studies. This would involve determining the need for a program and its content.
- Provision of financial support for both graduate and undergraduate students working on faculty research projects.
- Selection of a Student of the Year in a transportation-related field at either the University of Memphis or Vanderbilt University to attend an award ceremony in Washington, D.C. during the annual winter meeting of the Transportation Research Board (TRB). A \$1,000 award plus travel expenses will be provided from the UTC grant funds.
- Identification of the spectrum of regional workforce development needs in transportation and logistics, and to investigate opportunities for addressing these needs at all career levels – from skilled workers to engineers and managers.
- Investigation of opportunities to promote careers in transportation and logistics in the K-12 grades. These efforts will focus on underrepresented groups, including females and minorities. Existing programs will be surveyed and partnerships for sponsorship will be sought with industry, schools and foundations.

4. Performance Indicators

The Center will maintain records of all educational activities conducted. These will include the number of graduate and undergraduate transportation courses where intermodal and logistics topics have been added; the number of new graduate and undergraduate transportation courses; the enrollments in existing and new transportation courses; the number of professional development courses/workshops/etc., developed and respective enrollments; the number of students supported by the Center's research program; summaries of efforts to develop new multidisciplinary intermodal programs; summaries of programs supporting industry workforce development needs; and summaries of efforts to develop K-12 programs designed to attract students to transportation careers. The information will be documented in accordance with the reporting requirements set forth by RITA.

II.D Human Resources

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

1. Baseline Measures

See Baseline Measures 7, 8, and 9 in Appendix A

2. Human Resources Program Outcome

The primary program outcome will be an increase in the number of graduate and undergraduate students pursuing transportation-related degrees at the University of Memphis and Vanderbilt University. As outlined in Section II.C above, the interdisciplinary focus will enlarge the pool of graduates with the skills needed by industry and government able to contribute to the solution of intermodal transportation problems.

An additional outcome will be enhancing the capabilities of faculty at both institutions in the area of intermodal transportation. The research program supported by CIFTS funding will result in increased faculty involvement in transportation research. Center funding will also provide the foundation for hiring additional faculty in transportation areas. Faculty professional development efforts in transportation will be supported by the Center. Faculty will be engaged in collaborative work with other disciplines in meeting the goals of the education and research programs of the Center. Opportunities will also be made available to attend professional meetings and interact with industry professionals.

3. Planned Activities

- Recruit new students and attract existing students to intermodal transportation courses and programs. Materials will be prepared describing CIFTS educational and research program opportunities. These materials will be distributed nationally and regionally, as well as circulated internally among faculty at the two institutions. Dissemination methods will include presentations at conferences, workshops, and professional meetings as well as on the Center's website. The Center will participate in regional student workshops being planned to include the UTC's in the southeast region of the US. Financial aid will be provided for both graduate and undergraduate students engaged in research.

The workforce development programs initiated by CIFTS will also contribute to increasing the number of students studying intermodal transportation and adding skilled workers to the transportation industry in the region.

- Provide opportunities for faculty to participate in the education and research activities of the Center. This will be accomplished by encouraging faculty to submit research proposals and by providing support in the way of professional development opportunities for faculty to undertake the development of educational materials for courses and programs in intermodal transportation.

4. Performance Indicators

The Center will maintain records of human resource initiatives and their outcomes. This will include the number of transportation-related degree programs added since the beginning of the grant; the number of students enrolled in transportation-related advanced degree programs; the number of students receiving advanced transportation degrees; the number of faculty participating in transportation-related education and research programs; and the number of skilled workers produced through the workforce development program. The information will be summarized in accordance with the reporting requirements set forth by RITA.

II.E Diversity

Diversity Goal: To attract and retain students, faculty and staff who reflect the growing diversity of the US workforce and are substantively involved in the undergraduate, graduate and professional programs of the Center.

1. Baseline Measures

Baseline measures are not required

2. Diversity Program Outcomes

The Center will provide leadership to increase the diversity of students, faculty and staff engaged in transportation-related programs. Efforts will be focused on hiring practices, and student recruitment and retention.

Minority populations are underrepresented in transportation-related fields within the region's universities. Both institutions are committed to increasing the number of minority faculty and minority student enrollments. CIFTS will implement programs targeted at recruiting and retaining minority students. Minority faculty and staff participation in Center programs will be increased by focused recruiting efforts and by encouraging involvement in research.

Women are also underrepresented in the transportation workforce, specifically in engineering disciplines. CIFTS will support programs to recruit and retain female students in transportation and to increase the number of women teaching and performing transportation research.

3. Planned Activities

- The Center will consult with affirmative action offices on campus to ensure that transportation faculty recruiting activities include efforts to target minorities and women.
- Solicitations for research projects will be circulated among minority and women faculty, and they will be encouraged to submit proposals.
- Announcements of opportunities for financial support through participation in the research activities of the Center will be circulated among women and minority students.
- Outreach programs to K-12 students will focus on women and minorities. These programs will be modeled after the successful efforts currently underway at the University of Memphis.

4. Performance Indicators

Performance indicators for diversity programs are not required.

II.F Technology Transfer

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

1. Baseline Measures.

See Baseline Measures 10 and 11 in Appendix A.

2. Technology Transfer Program Outcomes

The technology transfer program will provide information on regional intermodal transportation issues and the Center's research and educational activities to the transportation professionals. Information will be disseminated via a Center web page, newsletters, reports, workshops and seminars. A primary consideration in the technology transfer program will be the timely distribution of information in a format that is user-friendly and supports government, industry and academic needs.

3. Planned Activities

- An annual regional intermodal symposium will be sponsored by the Center as a means of both identifying significant regional intermodal transportation issues facing the industry and presenting the results of the Center's research program. This conference will bring together representatives of government, academia and the private sector. The proceedings of the seminar will be widely-distributed and published on CIFTS' web site. The Center's Technology Transfer Committee will provide guidance in selecting conference themes.
- CIFTS will maintain an up-to-date internet home page which will include a description of the Center; its mission and current activities; a listing of key Center personnel and their contact information; access to Center research reports, publications and presentations; announcements of workshops, seminars, short courses, etc., sponsored by the Center; semi-annual Center

newsletters; proceedings from the annual regional intermodal transportation symposium; links to other intermodal transportation websites; and other pertinent information. The site will also include a page for visitors to request information on intermodal transportation topics. In addition, CIFTS will work with the Technology Transfer Committee to assess and respond to any needs for “communities of practice” or other web-based systems to serve industry.

- CIFTS will create and maintain a comprehensive database of public and private organizations and key personnel involved in intermodal transportation activities in the region. The Center will use periodic mailings and e-mail to distribute information and to draw attention to more detailed information available through the Center’s web site or other sources.
- The Center will prepare two newsletters per year providing information on CIFTS research and educational activities and announcing technology transfer opportunities.
- CIFTS will sponsor workshops and seminars on pertinent regional intermodal transportation topics. The topics will be selected in consultation with the Technology Transfer Committee. Discussions at the annual intermodal transportation symposium will provide a source for potential presentations.
- The Center will participate, as appropriate, in meetings of UTC and/or DOT officials on high-priority topics and in providing expert advice on technical matters.

4. Performance Indicators

CIFTS will maintain records of all technology transfer activities. Records will be kept on the number of workshops, seminars and short courses offered and their participants; web site hits; direct mail and e-mail activity; etc. The information will be summarized in accordance with the reporting requirements set forth by RITA.

SECTION III – Management Approach

III.A Institutional Resources

The University of Memphis is a comprehensive metropolitan research University in the eighteenth largest city in the United States. Opened in 1912 as a teacher training college, the UM has grown into one of the largest comprehensive universities in the southeast United States, serving a diverse student population of nearly 21,000. It is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools and is classified as a doctoral extensive University by the Carnegie ranking system.

CIFTS will be housed at the University of Memphis within the Herff College of Engineering. The center’s area of emphasis will complement existing transportation engineering research, technology transfer, and education programs being conducted principally in the Department of Civil Engineering. Over the past twenty years, the Civil Engineering Department has built a robust research program focused on intermodal transportation. In 1993, the University was one of only four universities to be designated as a National Maritime Enhancement Institute by the US Maritime Administration (MARAD). The University created the Inland Waterways Studies Institute and performed several studies for MARAD and for the U.S. Army Corps of Engineers on topics such as the Impacts of the Mississippi River Floods on Port Operations, Landside Access Issues at Inland Waterway Ports, and A Comparison of Safety and Environmental Impacts of Barge, Rail and Truck Movements. The Department has also conducted a rail study for the City of Memphis evaluating issues relating to renewal of track leasing agreements for downtown Memphis and performed the Memphis ITS Early Deployment Study for the Memphis MPO. The Transportation Studies Institute was established in the mid 1980’s, and the University has been a member of the Council of University Transportation Centers for 15 years. Technology transfer activities have included short courses for government agencies and the private transportation sector on a variety of topics including inland waterways port planning, highway safety, and highway design. In addition to offering graduate and undergraduate degrees with a transportation engineering concentration, the department has developed and presented summer workshops for K-12 students aimed at interesting

young people in careers in transportation. Working closely with our Bureau for Business and Economic Research and faculty in both Urban Affairs and Public Policy and Supply Chain Management, the University has become a key player in local transportation planning and safety-related programming.

The Vanderbilt Center for Transportation Research (VECTOR), established in 1988, has a solid record of achievement and is committed to continued excellence in all three of its mission components—research, education and outreach. Recognizing the complexity of transportation issues in the private sector and at every level of government, VECTOR emphasizes the integration of transportation engineering, planning, and management. Other distinguishing characteristics of VECTOR’s work include ground-breaking applications of information technology and risk management, systems thinking, and adherence to our statement of shared values. Current research is focused on the following topics:

- Policy, management, and operations
- Integrated information systems
- Intelligent transportation systems (ITS)
- Safety, security and risk management
- Emergency transportation operations
- Incident management
-

VECTOR represents Vanderbilt University as one of the member institutions of the Southeastern Transportation Center, and VECTOR has ongoing partnerships and working arrangements with other research institutions, professional organizations and transportation industry leaders. VECTOR draws on significant resources from the School of Engineering and other schools and departments of Vanderbilt University.

III.B Center Director

Dr. Martin Lipinski of the University of Memphis will serve as the CIFTS director and will be responsible for all Center activities and implementation of the CIFTS strategic plan. He will lead in defining the CIFTS mission and vision, and will be directly involved in Center planning and administration at all levels. Dr. Lipinski will provide leadership to the faculty, staff and students participating in Center functions.

Vanderbilt University, in consultation with Dr. Lipinski, will assign a person to serve as Associate Director of the Center. That person will be the principal administrator representing Vanderbilt, and will work closely with Dr. Lipinski on all important CIFTS matters.

The direction and activities of the CIFTS will be guided by an Executive Committee and an Advisory Board made up of recognized leaders from government and industry who know the landscape of the research, education, and technology transfer needs in the area of intermodal transportation. The Advisory Board will be comprised of three committees corresponding to the primary activity areas of the Center. The Executive Committee will be comprised of the chairs of each Advisory Board Committee along with government and industry leaders at large. The anticipated responsibilities of each committee are described below:

Committee	Primary Responsibilities
Executive Committee (12 members, including Chairs of Advisory Committees; CIFT Director and co-Director; representatives from TDOT and USDOT; and 5 at-large members. The at-large members will be appointed from representatives of key transportation modes such as rail, air or inland waterways and will include both the public and private sector such	Recommend overall goals and policies to the Board; review performance of the CIFTS and ensure attainment of goals; approve an annual budget and work program, including allocation of funds among program areas (e.g., education, technology transfer, research)

as trucking, air freight, or rail	
Education Advisory Committee (6 members including representation from both business and engineering and work force development professionals at the federal and local levels as well as the private sector)	Guide and support the accomplishment of planned activities; propose and facilitate programs to expand and enhance education and training; ensure alignment of educational initiatives with other CIFTS activities
Technology Transfer Advisory Committee (6 members including state and local government, business and engineering faculty, and the private sector who engage in training activities.)	Guide and support the accomplishment of planned activities; propose and facilitate programs to expand and enhance technology transfer; ensure alignment of technology transfer initiatives with other CIFTS activities
Research Advisory Committee (6 members including representatives of USDOT, state government, private sector transportation firms such as trucking, rail, air freight, or waterways, and universities)	Guide and support planned activities; develop and recommend Research Topic Areas (RTAs) to the Board; establish criteria for review of research proposals; review and act on research proposals; monitor and evaluate research progress

The initial members of the Executive Committee and Advisory Board will be asked to serve terms of three years, with the expectation that staggered terms will be established thereafter. The Executive Committee will meet quarterly during the initial 18 months of operation and twice per year thereafter. Advisory Board committees will meet more frequently as needed to carry out their respective responsibilities. The Executive Committee and Advisory Board will meet in joint session at least once per year. CIFTS may elect to increase the size of the Advisory Board committees and Executive Committee as necessary to include key stakeholder voices, but at no time shall these groups have fewer than the number of members stated above.

The Executive Committee will include the Director and co-Director of CIFTS, one representative each from TDOT and USDOT, Chairs of each Advisory Board Committee (Education, Technology Transfer, and Research) and 5 at-large individuals or organizational representatives with appropriate expertise.

The Executive Committee will suggest names of individuals and/or organizations for inclusion on the Advisory Board committees, and CIFTS will take care to balance membership among government, business, and university representation. Each committee will include at least one member from the University of Memphis and/or Vanderbilt who shall serve as secretary for the committee. Advisory Board committees will annually self-select a chair who will also serve on the Executive Committee.

In the administration of the personnel and financial aspects of the Center's operation, Dr. Lipinski will coordinate with the University of Memphis offices of Research Support, Accounting, and other campus units in overseeing these functions. All records will be reviewed quarterly and checked for compliance with UTC Program requirements. Vanderbilt University will designate a representative to provide quarterly personnel and financial records on the projects performed with Center funding.

The Director, with support from Center staff, will prepare and publish the semi-annual reports, the directory of key personnel, research project descriptions and other documents as needed. This information will be available on the CIFTS web site and in written form, as appropriate.

Dr. Lipinski will attend the two annual meetings of the UTC directors sponsored by DOT and represent CIFTS at the annual TRB meeting. He will also interface with government and private sector organizations at conferences and in meetings to engage in promotional activities of the Center, to encourage involvement in the Center, and to solicit matching funds for CIFTS projects.

III.C Center Faculty and Staff

The Director will be the only faculty member devoting 50% or more of his time to the center. Part-time administrative assistant positions will be established at both institutions to provide technical support, administrative and scheduling functions. A full-time staff person will be hired at the University of Memphis to perform additional administrative and programmatic support.

Faculty from both the University of Memphis and Vanderbilt University, as well as faculty from other institutions that may participate in research projects, will serve as principal investigators for individual projects, which will not require more than 50% of their time. CIFTS staff will provide administrative support for these projects.

III.D Multiparty Arrangements

CIFTS operation and administration will be under the direction of the University of Memphis in concert with Vanderbilt University. It is anticipated that approximately 65% of the Center's total budget will be concentrated at the University of Memphis, with the remainder allocated to Vanderbilt University. In instances where other partners may participate in Center programs, the University of Memphis will manage such programs and maintain control of associated funding.

III.E Matching Funds

The UTC program requires a 100% non-federal match. OMB Circular A-110 specifies the procedures that will be followed to determine the eligibility of matching funds. A special rule has been established for the UTC Program which permits the non-federal share to include funds provided under section 503, 504(b) or 505 of title 23, United States Code. This would include state planning and research funds.

The matching requirement is applicable to the entire program. However, a major criterion that will be considered in determining the individual projects to be supported by the center will be the availability of matching funds. It is anticipated that the major sources of matching funds for center projects, in order of magnitude, will be: state planning and research (SPR) funds from the Tennessee Department of Transportation, non-federal state transportation funds from the Tennessee Department of Transportation, university matching funds from The University of Memphis and Vanderbilt University including faculty and staff salaries, facilities, and indirect cost reductions, matching funds from private-sector companies, local government matching funds, funds from other State of Tennessee agencies (Tennessee Department of Environment and Conservation, Tennessee Department of Economic and Community Development, etc), and SPR funds from other state departments of transportation.

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APPENDIX A - BASELINE MEASURES

The following baseline measures reflect the activity at both The University of Memphis and Vanderbilt University

Research Selection

- 1. Number of transportation research projects selected for funding.

3

- 1a. Number considered to be:

Basic research 0

Advanced research 1

Applied Research 3

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

\$507,000

Research Performance

- 3. Number of transportation research reports published.

3

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

5

- 5. Number of courses offered that are considered part of a transportation curriculum. (these should include all courses that are offered, whether or not they were conducted during the past year).

Undergraduate

8

Graduate

15

- 6. Number of students participating in transportation research projects (count individual students)

Undergraduate

2

Graduate

4

Human Resources

7. Number of advanced degree programs offered that are considered to be transportation- related.

Master's Level:

3

Doctoral Level:

2

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

Master's Level:

6

Doctoral Level:

3

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

Master's Level:

3

Doctoral Level:

2

Technology Transfer

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

0

11. Number of transportation professional participating in these events.

0