NTC Program Progress Performance Report (PPPR) Information Form

For P.I.'s Use

On a semi-annual basis the NTC sponsored P.I. must report Program Progress Performance Report (PPPR) using the format specified in this PPPR Information Form. The form must be submitted electronically to the corresponding NTC Associate Director by 9/15/2014.

Cover Period: 4/1/2014 – 9/15/2014

NTC Funded Project Information (Round/Year 1, 2013-2014)	
University Name	Old Dominion University
Project Title	Combining Different Data Sources to Predict Origin-Destinations and Flow Patterns for Trucks in Large Networks
Principal Investigator	Mecit Cetin
PI Contact Information	mcetin@odu.edu

The form includes the following six parts:

- Part I – Performance Indicators
- Part II – Accomplishments: What was done? What was learned?
- Part III – Products: What has the program produced?
- Part IV – Participants & Collaborating Organizations: Who has been involved?
- Part V – Impact: What is the impact of the program? How has it contributed to transportation education, research and technology transfer?
- Part VI – Changes/Problems

Supplementary documents/materials can be attached to this form with the submission.

Part I – Performance Indicators	
Reporting Period	**4/1/2014 – 9/15/2014**
1. Transportation-related courses offered during the reporting period that were taught by faculty and/or teaching assistants who are associated with the UTC	N/A
Undergraduate courses	CEE470- Transportation Fundamentals
Graduate courses	CEE570- Transportation Fundamentals CEE776/876 – Simulation in Transportation Networks
2. Students supported by this grant	N/A
Undergraduate students	N/A
Masters students	N/A
Doctoral students	N/A
3. Students participating in transportation research projects funded by this grant (but not supported by this grant)	N/A
Undergraduate students	N/A
Graduate students	N/A
4. Students supported by this grant who received degrees	N/A
Undergraduate degrees	N/A
Masters degrees	N/A
Doctoral degrees	N/A

Part II – Accomplishments: What was done? What was learned?	
The information provided in this section allows the OST-R grants official to assess whether satisfactory progress has been made during the reporting period.	
Reporting Period	**4/1/2014 – 9/15/2014**
1. What are the major goals of the program?	The National UTC aims to promote strategic transportation policies, investment, and decisions that bring lasting and equitable economic benefits to the U.S. and its citizens. The Center is concerned with the integrated operations and planning of all modes serving the nation's passenger and freight transportation system, including the institutional issues associated with their management and investments. A balanced multi-modal approach will be used that considers freight and passenger travel mobility, reliability, and sustainability, as well as system operations during periods of both recurring and non-recurring incidents, including response to major emergencies. The modes in this theme include highway, transit, rail, and inter-modal interfaces including ports, terminals and airports. In particular, the center focuses on research, education, and technology transfer activities that can lead to (1) Freight efficiency for domestic shipping and for our international land, air, and sea ports; (2) Highway congestion mitigation with multi-modal strategies; and (3) Smart investments in intercity passenger travel facilities such as high speed rail. Major center activities are as following: • **Advanced & Applied Research Promoting Economic Competitiveness:** Our research activities are multimodal/intermodal and multidisciplinary in scope, with the aims of addressing nationally and regionally significant transportation issues pertinent to economic competitiveness and providing practice-ready solutions. • **Education, Workforce Development, Technology Transfer, & Diversity** The consortium is committed to providing high-quality transportation education and workforce development programs for a broad and diverse audience. Center's efforts will support the development of a critical transportation knowledge base and a transportation workforce that is prepared to design, deploy, operate, and maintain the complex transportation systems of the future.

2. What was accomplished under these goals?	This project is focused on developing/enhancing vehicle re-identification algorithms to anonymously match trucks between two detection sites by combining information from multiple sensors. To accomplish the goals of the project, data at the individual vehicle level are needed. For each vehicle crossing the sensors, its attributes, e.g., length and axle spacings, are needed. The PI had coordinated with VDOT (Virginia Department of Transportation) so that per-vehicle data are collected at four continuous count sites along I-64 in the Hampton Roads. Data spanning several weeks have been collected by VDOT and made available to the PI. In addition the PI has access to a different dataset that will also be used for model testing. The second dataset comes from WIM sites across Oregon and contain both vehicle specific data as well as unique tag/transponder numbers for a subset of trucks. Both datasets are being prepared for algorithm development and testing.
3. How have the results been disseminated?	A paper based on the preliminary analysis of the Oregon WIM data has been submitted to the Transportation Research Board's annual conference in January 2015.
4. What do you plan to do during the next reporting period to accomplish the goals? (10/1/2014 – 3/31/2015)	During the next reporting period, the vehicle re-identification algorithms will be developed and applied to the VDOT data.

Part III – Products: What has the program produced?	
Publications are the characteristic product of research projects funded by the UTC Program. OST-R may evaluate what the publications demonstrate about the excellence and significance of the research and the efficacy with which the results are being communicated to colleagues, potential users, and the public, not the number of publications. Many research projects (though not all) develop significant products other than publications. OST-R may assess and report both publications and other products to Congress, communities of interest, and the public.	
Reporting Period	**4/1/2014 – 9/15/2014**
1. Journal publications:	N/A
2. Books or other non-periodical, one-time publications	N/A
3. Other publications, conference papers and presentations	"Enhancing a Vehicle Reidentification Methodology Based on WIM Data to Minimize the Need for Ground Truth Data", A. P. Nichols, Cetin, C.S. Chou, NATMEC: Improving Traffic Data Collection, Analysis, and Use, Chicago, IL, June 29– July 2, 2014 Nichols, A.P., and M. Cetin (2015). Evaluation of Differential Calibration Accuracy Between WIM Stations Using Re-Identified Vehicles. 94th Transportation Research Board Annual Meeting, Washington, D.C., 15-2825. (under review).
4. Website(s) or other Internet site(s)	N/A
5. Technologies or techniques	N/A
6. Outreach activities	N/A
7. Courses and workshops	N/A
8. Inventions, patent applications, and/or licenses	N/A
9. Other products	N/A
Part IV – Participants & Collaborating Organizations: Who has been involved?	
OST-R needs to know who has worked on the project to gauge and report performance in promoting partnerships and collaborations.	
Reporting Period	**4/1/2014 – 9/15/2014**
1. What organizations	This project is currently conducted at ODU. VDOT is supporting this

have been involved as partners?	research by collecting and providing vehicle-specific data from the sensors in the field.
2. Have other collaborators or contacts been involved?	None.

Part V – Impact: What is the impact of the program? How has it contributed to transportation education, research and technology transfer?

DOT uses this information to assess how the research and education programs:

- **increase the body of knowledge and techniques;**
- **enlarge the pool of people trained to develop that knowledge and techniques or**
- **put it to use; and,**
- **improve the physical, institutional, and information resources that enable those people to get their training and perform their functions.**

Reporting Period	**4/1/2014 – 9/15/2014**
1. What is the impact on the development of the principal discipline(s) of the program?	This project is still underway; when completed, the developed methods and algorithms will contribute to the state-of-the-art on vehicle re-identification techniques.
2. What is the impact on other disciplines?	N/A
3. What is the impact on the development of transportation workforce development?	The PI is integrating the re- identification algorithms into the graduate courses in transportation (e.g., traffic flow theory). The collected per-vehicle data are also used in class projects to analyze traffic flow behavior.
4. What is the impact on physical, institutional, and information resources at the university or other partner institutions?	The project helped ODU receive valuable datasets (e.g., per-vehicle data from traffic sensors) from VDOT.
5. What is the impact on technology transfer?	The PI is serving as a consultant on an FHWA SBIR Phase II project that is focused on vehicle re-identification. The methods developed within this UTC project will be potentially integrated into a system being developed for field testing and deployment planned for the SBIR project.
6. What is the impact on society beyond science and technology?	N/A
7. Additional impacts	N/A

Part VI – Changes/Problems	
If not previously reported in writing to OST-R through other mechanisms, provide the following additional information or state, "Nothing to Report, if applicable:	
Reporting Period	**4/1/2014 – 9/15/2014**
1. Changes in approach and reasons for change	Nothing to Report
2. Actual or anticipated problems or delays and actions or plans to resolve them	Nothing to Report
3. Changes that have a significant impact on expenditures	Nothing to Report
4. Significant changes in use or care of human subjects, vertebrate animals, and/or biohazards	Nothing to Report
5. Change of primary performance site location from that originally proposed	Nothing to Report