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 2/24/16

Cover Period: 4/1/2015– 2/29/2016

NTC Funded Project Information (Round/Year 1, 2013-2014)	
University Name	NC State University
Project Title	Moving Transportation Research to Practice: TPID Webinar Series
Principal Investigator	James Martin
PI Contact Information	jbm@ncsu.edu 919-515-8620

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	**4/1/2015– 2/29/2016**
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	[Course Number] [Course Name]
Graduate courses	[Course Number] [Course Name]
2. Students supported by this grant	N/A
Undergraduate students	[Student Name]
Masters students	[Student Name]
Doctoral students	[Student Name]
3. Students participating in transportation research projects funded by this grant (but not supported by this grant)	N/A
Undergraduate students	[Student Name] [Supervisor]
Graduate students	[Student Name] [Supervisor]
4. Students supported by this grant who received degrees	N/A
Undergraduate degrees	[Student Name]
Masters degrees	[Student Name]
Doctoral degrees	[Student Name]

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	**4/1/2015– 2/29/2015**
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?	**Webinar 1** was held May 1, 2015 as described below: ***Technology and Innovation in Transport: A UK Perspective*** **Dr. Miles Elsden** **Chief Scientist and Acting Chief Scientific Advisor** **United Kingdom Department for Transport, London** **Friday, May 1, 2015** **2:00 – 3:30 PM ET** The invitation to join the webinar and a screenshot of the web registration technical page is attached to this report. Viewership from the webinar is shown below: • 133 pre-registered participants from 27 U.S. States, plus UMD students and staff on site. • 72 live viewers, 37 on-demand (recording) viewers to date. • 60% of participants (pre-registered) from State / Federal Gov't (DOTs & Resource Agencies); 40% from Local Gov't / University / Private Sector. An archived video of the webinar is at http://ter.ps/ntcprobedata **Webinar 2** was held July 9, 2015 as described below: ***Applications of Vehicle Probe Data for Performance Measurement*** **Thursday, July 9, 2015** **2:00 – 4:00 PM ET** This webinar features presentations by research faculty from the University of Maryland Center for Advanced Transportation Technology (CATT). Speakers **Kaveh Farokhi**, **Masoud Hamedi**, **Elham Sharifi**, and **Sepideh Eshragh** will discuss the CATT Laboratory's research and innovations in vehicle probe data applications. The invitation to join the webinar is attached to this report.

Viewership from the webinar is shown below:

- 138 viewers registered
- 29.0% State Government/DOT
- 26.1% University/Academic
- 23.9% Local Government/MPO/RPO
- 13.0% Federal Government/DOT
- 7.2% Corporation/Consultant
- 0.8% Nongovernmental Organization
- 32 U.S. states (incl. Washington DC) and Canada represented

Webinar 3 was held November 16, 2015 as described below:

Improving Freight Transportation Reliability
Monday, November 16, 2015
1:00 – 2:00 PM ET

As the Federal Highway Administration made clear some 10 years ago, "Reliable freight transportation is vital to the Nation's economy....When the transportation system becomes unreliable, ...freight assets like trucks become less productive, ...businesses put more trucks on the road to meet their customers' needs, and costs associated with warehousing inventory that would otherwise be on the road increase." (Public Roads, Vol 68, No. 3)

This webinar will focus on research being conducted at North Carolina State University and the University of Maryland that will help to make the freight transportation system more reliable. Engineering faculty **George F. List, PhD, PE**, of NC State, and **Paul M. Schonfeld, PhD, PE**, of UMD, will speak on improving our understanding of the sources of unreliable travel times, making it possible to predict what the reliability will be in specific situations, and estimating the resources and operating plans needed to ensure that reliable service will be provided.

Topics addressed in the webinar will include:

	• Importance and effects of (un)reliability in freight logistics; • Measurement and assessment of travel time reliability; • Strategies for route choice, departure time choice, and vehicle routing and scheduling; • Measures of effectiveness; • Cost trade-offs; • Ways of improving reliability from a public sector perspective; and • Carrier-based strategies that alleviate and minimize delay propagation through networks (transfer coordination, facility location and capacity, routing, scheduling, vehicle and fleet characteristics, slack times and other reserve factors, real-time dispatching, speed control, and priorities among vehicles or routes). Viewership from the webinar is shown below: • 146 viewers registered • 32.9% State Government/DOT • 18.2% University/Academic • 20.3% Local Government/MPO/RPO • 13.3% Federal Government/DOT • 14.0% Corporation/Consultant • 1.3% Nongovernmental Organization • 37 U.S. states (incl. Washington DC) and Canada represented The archived recording of the webinar can be viewed at: http://itre.adobeconnect.com/p9see2u9zx3/
3. How have the results been disseminated?	NA
4. What do you plan to do during the next reporting period to accomplish the goals? (4/1/2015– 9/30/2015)	Webinar 4 will be scheduled in the spring of 2016.

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	**4/1/2015– 2/29/2016**
1. Journal publications:	NA [List peer-reviewed articles or papers appearing in scientific, technical, or professional journals. Include any peer-reviewed publication in the periodically published proceedings of a scientific society, a conference, or the like. A publication in the proceedings of a one-time conference, not part of a series, should be reported under "Books or other non-periodical, one-time publications."] [Identify for each publication: Author(s); title; journal; volume: year; page numbers; status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).]
2. Books or other non-periodical, one-time publications	NA [Report any book, monograph, dissertation, abstract, or the like published as or in a separate publication, rather than a periodical or series. Include any significant publication in the proceedings of a one-time conference or in the report of a one-time study, commission, or the like.] [Identify for each one-time publication: Author(s); title; editor; title of collection, if applicable; bibliographic information; year; type of publication (book, thesis or dissertation, other); status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).]
3. Other publications, conference papers and	NA [Identify any other publications, conference papers and/or

presentations	presentations not reported above. Specify the status of the publication as noted above.]
4. Website(s) or other Internet site(s)	We anticipate a link on the center website for webinar announcements and registrations. **http://ntc.umd.edu/news/news_story.php?id=9399** [List the URL for any Internet site(s) that disseminates the results of the research and/or program activities. A short description of each site should be provided. It is not necessary to include the publications already specified above in this section.]
5. Technologies or techniques	NA [Identify technologies or techniques that have resulted from the research activities. Describe the technologies or techniques and how they are being shared. Such as Technologies or technology assessments]
6. Outreach activities	**Webinar 1**:Technology and Innovation in Transport: A UK Perspective Dr. Miles Elsden Chief Scientist and Acting Chief Scientific Advisor United Kingdom Department for Transport, London Friday, May 1, 2015 2:00 – 3:30 PM ET

	Webinar 2 was held May 1, 2015 as described below: ***Applications of Vehicle Probe Data for Performance Measurement*** **Thursday, July 9, 2015** **2:00 – 4:00 PM ET** This webinar features presentations by research faculty from the University of Maryland Center for Advanced Transportation Technology (CATT). Speakers **Kaveh Farokhi**, **Masoud Hamedi**, **Elham Sharifi**, and **Sepideh Eshragh** will discuss the CATT Laboratory's research and innovations in vehicle probe data applications. **Webinar 3** was held November 16, 2015 as described below: ***Improving Freight Transportation Reliability*** **Monday, November 16, 2015** **1:00 – 2:00 PM ET** As the Federal Highway Administration made clear some 10 years ago, "Reliable freight transportation is vital to the Nation's economy....When the transportation system becomes unreliable, ...freight assets like trucks become less productive, ...businesses put more trucks on the road to meet their customers' needs, and costs associated with warehousing inventory that would otherwise be on the road increase." (Public Roads, Vol 68, No. 3) This webinar will focus on research being conducted at North Carolina State University and the University of Maryland that will help to make the freight transportation system more reliable. Engineering faculty **George F. List, PhD, PE**, of NC State, and **Paul M. Schonfeld, PhD, PE**, of UMD, will speak on improving our understanding of the sources of unreliable travel times, making it possible to predict what the reliability will be in specific situations, and estimating the resources and operating plans needed to ensure that reliable service will be provided.
7. Courses and workshops	
8. Inventions, patent applications, and/or	[Identify inventions, patent applications with date, and/or licenses that have resulted from the research. Submission of this information

licenses	as part of an interim research performance progress report is not a substitute for any other invention reporting required under the terms and conditions of an award; as of the date of this document, UTC Program inventions may not be submitted to the Federal government's Interagency Edison (iEdison) invention-reporting system, but OST-R is working to make that available and will notify UTCs. For additional requirements pertaining to Patents and Copyrights, refer to General Provisions of Grants for University Transportation Centers, Section III, 14.]
9. Other products	[Identify any other significant products that were developed under this program. Describe the product and how it is being shared. Examples of other products are: • Databases • Physical collections • Audio or video products • Software or NetWare • Models • Educational aids or curricula • Instruments or equipment • Data & Research Material • Other]

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	**4/1/2015– 2/29/2016**
1. What organizations have been involved as partners?	[Describe partner organizations – academic institutions, other nonprofits, industrial or commercial firms, state or local governments, schools or school systems, or other organizations (foreign or domestic) – that have been involved with the program. Partner organizations may provide financial or in-kind support, supply facilities or equipment, collaborate in the research, exchange personnel, or otherwise contribute.] Partnering with University of Maryland to identify researchers to present webinars. Presenters are expected to come from other Center Universities. [Provide the following information for each partnership: Organization Name: Location of Organization: (if foreign location list country) Partner's contribution to the project (identify one or more) • Financial support; • In-kind support (e.g., partner makes software, computers, equipment, etc., available • to project staff); • Facilities (e.g., project staff use the partner's facilities for project activities); • Collaborative research (e.g., partner's staff work with project staff on the project); and • Personnel exchanges (e.g., project staff and/or partner's staff use each other's • facilities, work at each other's site).]

2. Have other collaborators or contacts been involved?	[Some significant collaborators or contacts within the lead or partner universities may not be covered by "What people have worked on the project?" Likewise, some significant collaborators or contacts outside the UTC may not be covered under "What other organizations have been involved as partners?" For example, describe any significant: • Collaborations with others within the lead or partner universities; especially • interdepartmental or interdisciplinary collaborations; • Collaborations or contact with others outside the UTC; and • Collaborations or contacts with others outside the United States or with an international organization. • Country(ies) of collaborations or contacts.]

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	**4/1/2015– 2/29/2015**
1. What is the impact on the development of the principal discipline(s) of the program?	Webinars will broadly disseminate research findings to the research community and beyond. Results will enhance academic pursuits by expanding knowledge in the specified research areas. [Describe how findings, results, techniques that were developed or extended, or other products from the program made an impact or are likely to make an impact on the base of knowledge, theory, and research and/or pedagogical methods in the principal disciplinary field(s) of the program. Summarize using language that an intelligent lay audience can understand (Scientific American style).] [How the field or discipline is defined is not as important as covering the impact the work has had on knowledge and technique. Make the best distinction possible, for example, by using a "field" or "discipline", if appropriate, that corresponds with a single academic department (i.e., physics rather than nuclear physics).] **NA**
2. What is the impact on other disciplines?	Within both the academic and practitioner audiences, new concepts, ideas and approaches can be ascertained from webinar content. Webinars also allow for questions to be answered by those on the research team and present new solutions for transportation challenges. [Describe how the findings, results, or techniques developed or improved, or other products from the program made an impact or are likely to make an impact on other disciplines.]

3. What is the impact on the development of transportation workforce development?	Webinar audiences are likely to consist of academics, students and practitioners. Professional development opportunities are provided for transportation practitioners and aspiring practitioners through exposure to research expertise. Researchers can also interact and get feedback on their approach to research solutions. Viewership from **Webinar 1** is shown below: • 133 pre-registered participants from 27 U.S. States, plus UMD students and staff on site. • 72 live viewers, 37 on-demand (recording) viewers to date. • 60% of participants (pre-registered) from State / Federal Gov't (DOTs & Resource Agencies); 40% from Local Gov't / University / Private Sector. Viewership from **Webinar 2** is shown below: • 138 viewers registered • 29.0% State Government/DOT • 26.1% University/Academic • 23.9% Local Government/MPO/RPO • 13.0% Federal Government/DOT • 7.2% Corporation/Consultant • 0.8% Nongovernmental Organization • 32 U.S. states (incl. Washington DC) and Canada represented Viewership from the **Webinar 3** is shown below: • 146 viewers registered • 32.9% State Government/DOT • 18.2% University/Academic • 20.3% Local Government/MPO/RPO • 13.3% Federal Government/DOT • 14.0% Corporation/Consultant • 1.3% Nongovernmental Organization • 37 U.S. states (incl. Washington DC) and Canada represented

	The archived recording of the webinar can be viewed at: http://itre.adobeconnect.com/p9see2u9zx3/ [Describe how the program made an impact or is likely to make an impact on transportation workforce development. For example, how has the program: • Provided opportunities for research and teaching in transportation and related disciplines; • Improved the performance, skills, or attitudes of members of underrepresented groups that will improve their access to or retention in transportation research, teaching, or other related professions; • Developed and disseminated new educational materials or provided scholarships; or provided exposure to transportation, science and technology for practitioners, teachers, young people, or other members of the public?]
4. What is the impact on physical, institutional, and information resources at the university or other partner institutions?	[Describe ways, if any, in which the program made an impact, or is likely to make an impact, on physical, institutional, and information resources that form infrastructure, including: • Physical resources such as facilities, laboratories, or instruments; • Institutional resources (such as establishment or sustenance of societies or organizations); or • Information resources, electronic means for accessing such resources or for scientific communication, or the like.]
5. What is the impact on	The webinar series will more broadly disseminate information to the

technology transfer?	research community as well as transportation practitioners. This effort will also create a much larger awareness of the work being done at the NTC. Hundreds of participants can be better informed about the impact of the center's research. [Describe ways in which the program made an impact, or is likely to make an impact, on commercial technology or public use, including: • Transfer of results to entities in government or industry; • Instances where the research has led to the initiation of a start-up company; or • Adoption of new practices.]
6. What is the impact on society beyond science and technology?	Much of the information shared should ultimately result in transportation solutions in the US that are more sustainable and positively impact the quality of life. [Describe how results from the program made an impact, or are likely to make an impact, beyond the bounds of science, engineering, and the academic world on areas such as: • Improving public knowledge, attitudes, skills, and abilities; • Changing behavior, practices, decision making, policies (including regulatory policies), or social actions; or • Improving social, economic, civic, or environmental conditions]
7. Additional impacts	[NTC encourages to consider identifying program results by outcomes or impacts, as suggested by the examples below. Impacts should be linked to National goals expressed in the Secretary's Strategic Goals.] [Outcomes are broader changes that are expected to result from the

	products, such as: • Increased understanding and awareness of transportation issues; • Improved body of knowledge; • Improved processes, techniques and skills in addressing transportation issues; • Enlarged pool of trained transportation professionals; • Greater adoption of new technology; • Other impacts. Impacts are the longer-term, fundamental changes intended as a result of your activities, such as: • Safer driver behavior; • Increased travel time reliability; • Increased intermodal transportation operations; • Reduction in carbon and other harmful emissions from transportation sources; • Other impacts.]

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	**4/1/2015– 2/29/2016**
1. Changes in approach and reasons for change	If there is nothing significant to report during this reporting period, state "Nothing to Report."] [Describe any changes in approach during the reporting period and reasons for these changes. Remember that significant changes in objectives and scope require prior approval of the OST-R grant administrator.] **Nothing to Report**
2. Actual or anticipated problems or delays and actions or plans to resolve them	Nothing to Report. [If there is nothing significant to report during this reporting period, state "Nothing to Report."] [Describe problems or delays encountered during the reporting period and actions or plans to resolve them.]
3. Changes that have a significant impact on expenditures	[If there is nothing significant to report during this reporting period, state "Nothing to Report."] [Describe changes during the reporting period that may have a significant impact on expenditures, for example, delays in hiring staff or favorable developments that enable meeting objectives at less cost than anticipated.] **Nothing to Report**

4. Significant changes in use or care of human subjects, vertebrate animals, and/or biohazards	[If there is nothing significant to report during this reporting period, state "Nothing to Report."] [Describe significant deviations, unexpected outcomes, or changes in approved protocols for the use or care of human subjects, vertebrate animals, and/or biohazards during the reporting period. If required, were these changes approved by the applicable institution committee and reported to the agency? Also specify the applicable Institutional Review Board/Institutional Animal Care and Use Committee approval dates.] **Nothing to Report**
5. Change of primary performance site location from that originally proposed	[If there is nothing significant to report during this reporting period, state "Nothing to Report."] [Identify any change to the primary performance site location identified in the proposal, as originally submitted.] **Nothing to Report**