

**Program Progress Performance Report for University
Transportation Research Centers (PPPR #1)**

Prepared for the Research and Innovative Technology Administration (RITA);
U.S. Department of Transportation (US DOT)

Grant Project Title:

**Advanced Operations Focused on Connected
Vehicles/Infrastructure (CVI-UTC)**

Consortium Members:

**Virginia Tech Transportation Institute (VTTI),
University of Virginia (UVA) Center for Transportation Studies,
and Morgan State University (MSU).**

Submitted by:

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Grant Period: January 2012 – January 2014

Reporting Period End Date: April 2014

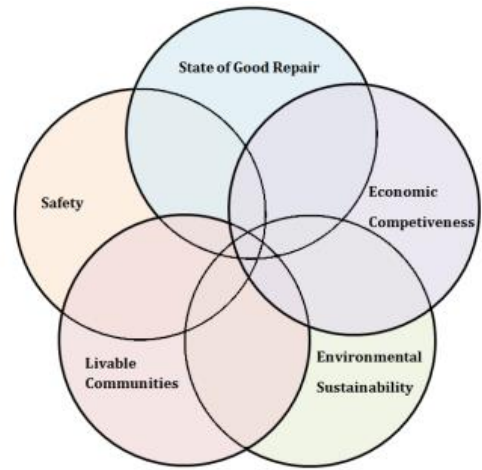
Quarterly reporting periods

Summer: July 15, 2012

Accomplishments

What are the major goals and objectives of the program?

- Safety
- State of Good Repair
- Economic Competitiveness
- Livable Communities
- Environmental Sustainability
- All goals though connected vehicles/infrastructure



What was accomplished under these goals?

- Major activities:
 - CVI-UTC Website initial set up and development
 - VTTI School Days Outreach (K-12 students, teachers, parents)
 - VTTI Open House (Virginia Tech, Blacksburg, Southwest Virginia residents)
 - UVA CTS Cooperative Transportation Systems
 - Morgan State Electric Vehicle Infrastructure Council
 - Morgan State National Summer Transportation Institute (HS Students)
 - Morgan State Teacher Transportation Institute (HS Teachers)
 - ITSA Conference: UTC Introduction, Consortium, and Advisory Board Reception
 - VDOT Northern Virginia and Smart Road Test Bed Installation/Meeting in NOVA
 - Advisory Board two-part Research Selection Meeting
 - The selection and start of 15 new inner-consortium UTC research projects
- Specific objectives:

Major Activities:	Safety	State of Good Repair	Economic Competitiveness	Livable Communities	Environmental Sustainability
CVI-UTC Website	X	X	X	X	X
VTTI School Days	X			X	X
VTTI Open House	X			X	X
UVA Cooperative Transportation Systems	X	X	X	X	X
MSU Electric Vehicle/Infrastructure Council	X	X	X	X	X
MSU Summer Transportation Institute				X	
MSU Teacher Transportation Institute				X	
ITSA Conference Reception			X	X	
Advisory Board Meetings	X	X	X	X	X
VDOT Test Beds Installation	X	X	X	X	X
Research Selection	X	X	X	X	X
Research Initiation	X	X	X	X	X

- Significant results, including major findings, developments, conclusions (+ and -):
 - Nothing to report – no research is completed yet.

- Key outcomes or other achievements:
 - Advisory Board Assembly and Meetings, Test Bed Development and Construction, and Research Evaluation and Selection have been our three major outcomes/achievements during this first reporting period.
- Discussion of stated goals not met:
 - We would have liked to have started research much earlier to have more concrete data to present in this first reporting period – however in the initial set-up we had to develop a way to evaluate and select research, as well as, select an advisory board of peers to do the research evaluation and selection. But now that research has been selected and has begun, we anticipate a stronger showing from our UTC and more concrete evidence to share based on UTC research funding in our future quarterly reports. The research will also allow us to participate in more outreach events and allow for more concrete transfer of evidence.

What opportunities for training and professional development has the program provided?

- Nothing to report

How have the results been disseminated? If so, in what ways?

- Nothing to report

What do you plan to do during the next reporting period to accomplish the goal's end objectives?

- We are really looking forward to being able to start, complete, and report on our newly approved and funded research. In six months we are holding an additional research call for 2013 research, it will be a bit smaller than our initial call, but we are looking for proposals that will build upon research starting now, and additional outside collaboration from universities outside of the consortium. We are also looking forward to participating in such events like the TRB winter conference in January, and more recently ITS International (Vienna, Austria), where we have a researcher who is able to present some connected vehicle work they are starting now.

Products

What has the program produced?

- Publications, conference papers, presentations: Nothing to report
- Websites; other Internet (<http://www.connectedvehicleinfrastructure-utc.org>)
- Technologies, techniques: Nothing to report
- Inventions, patent applications, licenses: Nothing to report
- Other: the Northern Virginia and Southwest Virginia Highly Instrumented Test Beds.

Participants and Other Collaborating Organizations

What individuals have worked on the program?

NOTE: This reporting session, none of our individuals working on the program have had any foreign collaboration or travel, and therefore it is not listed here.

Name: Tom Dingus
Organization: VTTI
Primary Role in the UTC: Leadership
Number of Hours Worked this Reporting Period: 728
Major Contributions: UTC Center Director (50% Effort), VTTI Center Director (50% Effort),
Research: "Safety and Human Factors of Adaptive Stop/Yield Signs Using Connected Vehicle
Infrastructure" (NEW)
Funded by the UTC Grant? No (VTTI Cash Match)

Name: Hesham Rakha
Organization: VTTI
Primary Role in the UTC: Primary Research
Number of Hours Worked this Reporting Period: 368
Major Contributions: Research: "Developing Connected Vehicle Freeway Speed Harmonization
Algorithms" (NEW), "Developing Freeway Cooperative Adaptive Cruise Control Systems" (NEW),
"Field Testing of Eco-Speed Control Using V2I Communications" (NEW), "Cooperative Intersection
Control" (NEW)
Funded by the UTC Grant? Yes

Name: Karim Fadhloun
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "Developing Freeway Cooperative Adaptive Cruise Control
Systems" (NEW)
Funded by the UTC Grant? Yes

Name: Raj Kishore
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "Field Testing of Eco-Speed Control Using V2I Communications"
(NEW)
Funded by the UTC Grant? Yes

Name: Ismail Zohdy
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "Cooperative Intersection Control" (NEW)
Funded by the UTC Grant? Yes

Name: Jon Antin
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "Connected Vehicles and Infrastructure: Driver Acceptance across
the Generations – Phase II" (NEW)
Funded by the UTC Grant? Yes

Name: Linda Angell
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "Connected Vehicles and Infrastructure: Driver Acceptance across the Generations – Phase II" (NEW)
Funded by the UTC Grant? Yes

Name: Tom Martin
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "An Innovative "Intelligent" Awareness System for Work Zone Workers Using Dedicated Short-Range Communications" (NEW)
Funded by the UTC Grant? Yes

Name: Ronald Gibbons
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "Connected Vehicle Applications for Adaptive Lighting" (NEW)
Funded by the UTC Grant? Yes

Name: Alejandra Medina
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "Connected Vehicle Applications for Adaptive Lighting" (NEW)
Funded by the UTC Grant? Yes

Name: Ihab Elshawarby
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Research support
Funded by the UTC Grant? Yes

Name: Kyounggho Ahn
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Research support
Funded by the UTC Grant? Yes

Name: Sangjun Park
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Research support
Funded by the UTC Grant? Yes

Name: Darrell Bowman
Organization: VTTI
Primary Role in the UTC: Lead Technical and Primary Research
Number of Hours Worked this Reporting Period: 376
Major Contributions: Highly instrumented vehicle fleet development and installation, and Research: "An Innovative "Intelligent" Awareness System for Work Zone Workers Using Dedicated Short-Range Communications" (NEW)
Funded by the UTC Grant? Yes

Name: Myra Blanco
Organization: VTTI
Primary Role in the UTC: Research and Outreach
Number of Hours Worked this Reporting Period: 8
Major Contributions: Outreach by attendance at conferences, research support.
Funded by the UTC Grant? No

Name: Zac Doerzaph
Organization: VTTI
Primary Role in the UTC: Primary Research and UTC Leadership
Number of Hours Worked this Reporting Period: 288
Major Contributions: Co-ordination with Tom Dingus' efforts, test bed development and leadership, UTC expert and leadership on connected vehicles, outreach and demonstration efforts, research evaluation and selection/support, outreach through conference attendance and presentations, point person for technical purchasing
Funded by the UTC Grant? Yes

Name: Kelly Stanley
Organization: VTTI
Primary Role in the UTC: Research and Outreach
Number of Hours Worked this Reporting Period: 72
Major Contributions: Outreach by attendance at conferences, coordination and participation of VT/VTTI outreach events, research support
Funded by the UTC Grant? Yes

Name: Greg Fitch
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Attendance and presentations at conferences, research support
Funded by the UTC Grant? Yes

Name: Richard Hanowski
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Attendance and presentations at conferences, research support
Funded by the UTC Grant? No (VTTI Cash Match)

Name: Andy Schaudt
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Webinar participation and Research support
Funded by the UTC Grant? Yes

Name: Justin Morgan
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Research support
Funded by the UTC Grant? Yes

Name: LaTanya Holmes
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Webinar participation and Research support
Funded by the UTC Grant? Yes

Name: Leslie Harwood
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Co-ordination with Zac Doerzaph's research efforts, administrative assistance, research support and leadership
Funded by the UTC Grant? Yes

Name: Reginald Viray
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Research support
Funded by the UTC Grant? Yes

Name: Tammy Trimble
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Research support
Funded by the UTC Grant? Yes

Name: Stephanie Baker
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Research support
Funded by the UTC Grant? Yes

Name: Andrew Marinick
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Research support
Funded by the UTC Grant? Yes

Name: Jeanne Rice
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Research support
Funded by the UTC Grant? Yes

Name: Scott Tidwell
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Research support
Funded by the UTC Grant? Yes

Name: Laura Toole
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 1456
Major Contributions: Research support
Funded by the UTC Grant? Yes

Name: Vicki Flitchett
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Research support
Funded by the UTC Grant? Yes

Name: Andy Petersen
Organization: VTTI
Primary Role in the UTC: Lead Technical
Number of Hours Worked this Reporting Period: 424
Major Contributions: Test bed development and leadership, UTC expert and leadership on connected vehicles, unique design and development efforts for aftermarket safety devices and highly instrumented vehicle fleet, point person for technical purchasing
Funded by the UTC Grant? Yes

Name: Tammy Russell
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 872
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Carl Cospell
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 1416
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Jared Bryson
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 408
Major Contributions: Technical support for VDOT installation and technical development, Auto CAD documentation and development for Northern Virginia Test Bed
Funded by the UTC Grant? Yes

Name: Andrew Alden
Organization: VTTI
Primary Role in the UTC: Smart Road Test Bed Development
Number of Hours Worked this Reporting Period: 8
Major Contributions: Technical support for VDOT installation and technical development, Auto CAD documentation and development for Smart Road Test Bed
Funded by the UTC Grant? No (VDOT Cash Match)

Name: Julie Jermeland
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 672
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Dave Mellichamp
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 464
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Matt Perez
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 264
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Mathew Moeller
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 72
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Stacey Payne
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 72
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Reggie Bryson
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 128
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Ryan Talbot
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 1136
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Craig Butcher
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 72
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Jean Paul Talledo Vilela
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 264
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Mike Ellery
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 72
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Ryan Mowry
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 72
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Edgar de Leon Izeppi
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 72
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Samer Katicha
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 72
Major Contributions: Technical support for VDOT installation and technical development
Funded by the UTC Grant? Yes

Name: Gerardo Flintsch
Organization: VTTI
Primary Role in the UTC: Primary Research
Number of Hours Worked this Reporting Period: 368
Major Contributions: Research: "Pavement Conditions Measures" (NEW)
Funded by the UTC Grant? Yes

Name: Michael Baird
Organization: VTTI
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "Safety and Human Factors of Adaptive Stop/Yield Signs Using Connected Vehicle Infrastructure" (NEW)
Funded by the UTC Grant? Yes

Name: Shinya Kikuchi
Organization: VT
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "Connected Vehicle-Infrastructure Application Development for Addressing Safety and Congestion Issues Related to Public Transportation, Pedestrians, and Bicyclists" (NEW)
Funded by the UTC Grant? Yes

Name: Pamela Murray-Tuite
Organization: VT
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "Emergency Vehicle to Vehicle Communication" (NEW)
Funded by the UTC Grant? Yes

Name: Kathleen Hancock
Organization: VT
Primary Role in the UTC: Primary Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "Emergency Vehicle to Vehicle Communication" (NEW)
Funded by the UTC Grant? Yes

Name: Gabrielle Laskey
Organization: VTTI
Primary Role in the UTC: Administration
Number of Hours Worked this Reporting Period: 1456
Major Contributions: Major Grant Administration and VTTI Administration for UTC
Funded by the UTC Grant? No (VTTI Cash Match)

Name: Sherri Box
Organization: VTTI
Primary Role in the UTC: Administration
Number of Hours Worked this Reporting Period: 8
Major Contributions: VTTI Communications Manager
Funded by the UTC Grant? Yes

Name: Jessamine Kane-Wisely
Organization: VTTI
Primary Role in the UTC: Administration
Number of Hours Worked this Reporting Period: 8
Major Contributions: Website, Graphic Design
Funded by the UTC Grant? Yes

Name: April Gray
Organization: VTTI
Primary Role in the UTC: Administration
Number of Hours Worked this Reporting Period: 8
Major Contributions: Website, Graphic Design
Funded by the UTC Grant? Yes

Name: Scott Stone
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 128
Major Contributions: Highly Instrumented Vehicle Fleet and Test Beds Technical Development and Installation, Aftermarket Safety Device Development
Funded by the UTC Grant? No (VDOT Cash Match)

Name: Alex Biers
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 464
Major Contributions: Highly Instrumented Vehicle Fleet and Test Beds Technical Development and Installation, Aftermarket Safety Device Development
Funded by the UTC Grant? No (VDOT Cash Match)

Name: Kenny Smith
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 264
Major Contributions: Highly Instrumented Vehicle Fleet and Test Beds Technical Development and Installation, Aftermarket Safety Device Development
Funded by the UTC Grant? No (VDOT Cash Match)

Name: Loren Stowe
Organization: VTTI
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 200
Major Contributions: Highly Instrumented Vehicle Fleet and Test Beds Technical Development and Installation, Aftermarket Safety Device Development
Funded by the UTC Grant? No (VDOT Cash Match)

Name: Brian Smith
Organization: UVA
Primary Role in the UTC: Leadership
Number of Hours Worked this Reporting Period: 144
Major Contributions: Consortium University Director, Director of Cooperative Transportation Systems Center, Research: "Connected Vehicle Enabled Freeway Merge Management - Field Test" (NEW), "Pavement Conditions Measures" (NEW), "Infrastructure Safety Assessment Using Connected Vehicle Data" (NEW)
Funded by the UTC Grant? Yes

Name: B.Brian Park
Organization: UVA
Primary Role in the UTC: Primary Research
Number of Hours Worked this Reporting Period: 72
Major Contributions: Test bed development consulting, Research: "Cooperative Intersection Control" (NEW)
Funded by the UTC Grant? Yes

Name: Hyungjun Park
Organization: UVA
Primary Role in the UTC: Primary Research
Number of Hours Worked this Reporting Period: 368
Major Contributions: Research: "Connected Vehicle Enabled Freeway Merge Management - Field Test" (NEW)
Funded by the UTC Grant? Yes

Name: Joyoung Lee
Organization: UVA
Primary Role in the UTC: Primary Research
Number of Hours Worked this Reporting Period: 216
Major Contributions: Research: "Cooperative Intersection Control" (NEW)
Funded by the UTC Grant? Yes

Name: Beth O'Donnell
Organization: UVA
Primary Role in the UTC: Administration
Number of Hours Worked this Reporting Period: 216
Major Contributions: Consortium university primary administration and daily operations
Funded by the UTC Grant? Yes

Name: Tanveer Hayat
Organization: UVA
Primary Role in the UTC: Research
Number of Hours Worked this Reporting Period: 8
Major Contributions: Research: "Connected Vehicle Enabled Freeway Merge Management – Field Test" (NEW)
Funded by the UTC Grant? Yes

Name: Andrew Farkas
Organization: Morgan State
Primary Role in the UTC: Leadership
Number of Hours Worked this Reporting Period: 464
Major Contributions: Consortium University Director, Director of MSU Electric Vehicle/Infrastructure Council, Director of MSU Summer Transportation Institute, Director of MSU Teacher Transportation Institute
Funded by the UTC Grant? Yes

Name: Hyeon-Shic Shin
Organization: Morgan State
Primary Role in the UTC: Primary Research
Number of Hours Worked this Reporting Period: 464
Major Contributions: Research: "Measuring User Acceptance of and Willingness-to-Pay for V2V" (NEW)
Funded by the UTC Grant? Yes

Name: Manouesh Jeihani
Organization: Morgan State
Primary Role in the UTC: Primary Research
Number of Hours Worked this Reporting Period: 464
Major Contributions: Research: "Measuring User Acceptance of and Willingness-to-Pay for V2V" (NEW)
Funded by the UTC Grant? Yes

Name: Young-Jae Lee
Organization: Morgan State
Primary Role in the UTC: Primary Research
Number of Hours Worked this Reporting Period: 464
Major Contributions: Research: "Measuring User Acceptance of and Willingness-to-Pay for V2V" (NEW), "Development of the Evaluation Framework for the Connected Vehicle/Infrastructure Application Performance Measures Identification and In-depth Benefits Assessment" (NEW)
Funded by the UTC Grant? Yes

Name: Manoj Jha
Organization: Morgan State
Primary Role in the UTC: Primary Research
Number of Hours Worked this Reporting Period: 464
Major Contributions: Research: "Connected Vehicle-Infrastructure Application Development for Addressing Safety and Congestion Issues Related to Public Transportation, Pedestrians, and Bicyclists" (NEW)
Funded by the UTC Grant? Yes

Name: Anita Jones
Organization: Morgan State
Primary Role in the UTC: Administration
Number of Hours Worked this Reporting Period: 128
Major Contributions: Consortium university primary administration and daily operations
Funded by the UTC Grant? Yes

Name: Erica Johnson
Organization: Morgan State
Primary Role in the UTC: Administration
Number of Hours Worked this Reporting Period: 128
Major Contributions: Communications Manager for MSU
Funded by the UTC Grant? Yes

Name: Valencia Baker
Organization: Morgan State
Primary Role in the UTC: Administration
Number of Hours Worked this Reporting Period: 128
Major Contributions: Education Program Director
Funded by the UTC Grant? Yes

Name: Sonia McDonald
Organization: Morgan State
Primary Role in the UTC: Administration
Number of Hours Worked this Reporting Period: 128
Major Contributions: Consortium university administration and daily operations
Funded by the UTC Grant? Yes

Name: Catherine McGhee
Organization: VDOT
Primary Role in the UTC: Advisory Board/Consortium Leadership at the State Level
Number of Hours Worked this Reporting Period: 144
Major Contributions: Director of the Advisory Board, Test Bed Development, State Liaison
Funded by the UTC Grant? No (VDOT Cash Match)

Name: Hari Sripathi
Organization: VDOT
Primary Role in the UTC: Advisory Board
Number of Hours Worked this Reporting Period: 8
Major Contributions: VDOT Northern Virginia Contact, Test Bed Development and Research Selection
Funded by the UTC Grant? No (VDOT Cash Match)

Name: Kenneth Earnest
Organization: VDOT
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 8
Major Contributions: Test Bed Development and Installation, Research Selection
Funded by the UTC Grant? No (VDOT Cash Match)

Name: Melissa Lance
Organization: VDOT
Primary Role in the UTC: Technical
Number of Hours Worked this Reporting Period: 8
Major Contributions: Test Bed Development and Installation, Research Selection
Funded by the UTC Grant? No (VDOT Cash Match)

Name: Kamal Suliman
Organization: VDOT
Primary Role in the UTC: Test Bed Development
Number of Hours Worked this Reporting Period: 8
Major Contributions: Test Bed Development and Installation, particularly in Northern Virginia
Funded by the UTC Grant? No (VDOT Cash Match)

Have other collaborators or contacts been involved? (Can be “nothing to report”, if so.)

- Seri Park, Villanova University (Research partner with Young-Jae Lee at Morgan State).
- Collaborations with others within the lead or partner universities, especially interdepartmental or interdisciplinary collaborations: Brian Smith (UVA) and Gerardo Flintsch (VTTI) Research: “Pavement Condition Measures” (NEW); Manoj Jha (Morgan State) and Shinya Kikuchi (VT) Research: “Connected Vehicle-Infrastructure Application Development for Addressing Safety and Congestion Issues Related to Public Transportation, Pedestrians, and Bicyclists” (NEW); Hesham Rakha/Ismail Zohdy (VTTI) and B. Brian Park/Joyoung Lee (UVA) “Cooperative Intersection Control” (NEW).
- Collaborations or contact with others outside the UTC: Young-Jae Lee (Morgan State) and Seri Park (Villanova University – outside UTC consortium) Research: “Development of the Evaluation Framework for the Connected Vehicle/Infrastructure Application Performance Measures Identification and In-Depth Benefits Assessment” (NEW)
- Collaborations or contacts with others outside of the United States or with an international organization: countries of collaborations or contacts: Nothing to report.

Impact

What is the impact of the program?

- The biggest impact of this first report is the installation and development of the Northern Virginia and Southwest Virginia test beds. The secondary impacts have been through our UTC outreach efforts collectively and at each consortium university: Open House, School Days, Cooperative Transportation Systems, Electric Vehicle/Infrastructure Council, Summer Transportation Institute, Teacher Transportation Institute, and ITSA Conference.

How has it contributed to transportation education, research and technology transfer?

- The test beds will influence the way connected vehicle/infrastructure research is conducted for our UTC, and in the future, incorporated into the national connected vehicle test bed. The test beds will also be able to be used not only by our specific UTC, but to any institution or university that desires to do simulation and real-world connected vehicle/infrastructure research.

- The outreach that is completed by our UTC is designed to educate future engineers, STEM educators, and current engineers (civil, mechanical, electrical, etc.)/human factors (psychology, social sciences, etc.) practitioners. School Days target educators, parents, elementary school students to high school students. Open House is open to the general community, including transportation professionals, university students and community college students. Summer Transportation Institute focuses on high school to college transitioning students, and Teacher Transportation Institute educates educators on how to input STEM lesson plans into their high school curriculum.
- The ultimate goal is to expand our current CVI-UTC efforts more online/virtually to affect a broader national audience, and to complete more research using the developed test beds to enable professional conference attendance, publication, and presentations.

How has the program provided opportunities for research and teaching in transportation and related disciplines?

- This reporting period, we were able to offer 15 research opportunities for consortium university members, with one-third of the research projects being led or co-authored by graduate students and their mentors. There are also many opportunities available within each research project for university students to collect and analyze data. This research set-up allows for a close relationship between educators and students in working towards research with practical applications for the field of transportation. For the next reporting period, we are looking for expanding the research opportunities to universities outside of the UTC consortium, and we are looking to do broader outreach and education.

How has the program 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?

- Morgan State's participation in our UTC has been able to majorly affect underrepresented groups through their research projects and outreach and education opportunities. By inner-consortium research work with Morgan State, this has allowed UVA and VTTI to participate in influencing underrepresented groups. Morgan State also directly offers programs for Baltimore-area high school students and teachers, which include underrepresented populations, and has allowed UTC research to directly affect future generations of potential engineers and human factors professionals.

How has the program developed and disseminated new educational materials or provided scholarships?

- Each consortium university has funded at least six students in their respective programs through UTC funding. Each university has done this by essentially funding students to participate directly in research and in transportation work study opportunities. Education and Outreach materials have also been developed through the UTC program to disseminate at major conferences (CUTC/TRB/ITS) as a way to inform transportation professionals about innovative and progressive CVI best practices and research and what is being done through the UTC.

How has the program provided exposure to transportation, science and technology for practitioners, teachers, young people, or other members of the project?

- Programs such as Open House and School Days at VT and the Summer and Teacher Institutes at Morgan State, allow the UTC to expose and educate a broader audience about CVI research and best practices. We also hope that with the collection of data and research, we will be able to offer more conference funding and participation for researchers through the UTC grant. The first opportunity that has presented itself is the ITS International Conference, where we will be able to send a researcher to present their initial work with the CVI-UTC, and we would like to do more of this in the future reporting periods. The UTC also hosts monthly meetings with our advisory board and consortium leaders to aid in directing education and outreach opportunities, and to help evaluate and review research that drives the direction of the UTC.

Has the grant money or research done impacted physical resources at the university, institutional resources or information resources?

- The grant money has absolutely been instrumental in developing and installing the highly instrumented test beds in Northern Virginia and Southwest Virginia. Without the UTC funding, it would be unlikely that these projects could have been completed with the velocity that they have been propelled. It has offered the consortium universities opportunities for research that would not have been possible this year without the grant. The grant money has also indirectly created several short-term job opportunities at consortium universities via the opportunities for reach and the equipment construction and installation. As the UTC progresses, it is anticipated that many of these job opportunities may become longer term as research progresses and value of CVI is heightened within the field of transportation.

Describe ways in which the program made an impact, or is likely to make an impact, on commercial technology or public use.

- Because our UTC has been fortunate enough to work closely with automotive, technology, and wireless communication professionals through assembling our advisory board with these types of professionals, how closely our consortium university leaders works with these professionals, and through our test bed installations – we believe that this allows our UTC a unique opportunity not only to have this commercial technology and public use influence on the direction of our research goals, but also an opportunity to do work that is directly practically applicable and has a great deal of potential for commercial marketing and public use, probably a lot faster than the majority of university research may have an impact on the commercially viable aspects of transportation.

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.

- The CVI-UTC is likely to make an impact beyond STEM or academia because it is a field and a UTC that encourages safety, affordability, and practicality for every transportation consumer in America. This may sound grandiose, but through the research this UTC is completing, the outreach and education opportunities, and the technical development of aftermarket safety devices that use CVI technology for naïve drivers, these are practical applications that are occurring right now in Maryland and Virginia because of the UTC funding. We know that we can expand these current activities to a broader audience in future reporting periods.

Changes/Problems

- Changes in approach and reasons for change. – Nothing to report.
- Actual or anticipated problems or delays and actions or plans to resolve them. – Nothing to report.
- Changes that have a significant impact on expenditures. – Nothing to report.
- Significant changes in use or care of animals, human subjects, and biohazards. – Nothing to report.

Outputs

- Research projects awarded:

Research Projects:	Safety	State of Good Repair	Economic Competitiveness	Livable Communities	Environmental Sustainability
Connected Vehicles and Infrastructure: Driver Acceptance Across the Generations				X	
Connected Vehicle Applications for Adaptive Lighting	X	X	X	X	X
Connected Vehicle Enabled Freeway Merge Management - Field Test	X			X	
Connected Vehicle-Infrastructure Application Development for Addressing Safety and Congestion Issues Related to Public Transportation, Pedestrians, and Bicyclists	X	X	X	X	X
Cooperative Intersection Control	X			X	
Developing Connected Vehicle Freeway Speed Harmonization Algorithms	X		X	X	X
Developing Freeway Cooperative Adaptive Cruise Control Systems	X		X	X	X
Development of the Evaluation Framework for the Connected Vehicle/Infrastructure Application Performance Measures Identification and In-Depth Benefits Assessment	X	X	X	X	X
Emergency Vehicle to Vehicle Communication	X			X	X
Field Testing of Eco-Speed Control Using V2I Communication			X	X	X
Infrastructure Safety Assessment Using Connected Vehicle Data	X	X	X	X	X
An Innovative "Intelligent" Awareness System for Work Zone Workers Using Dedicated Short-Range Communications	X			X	
Measuring User Acceptance of and Willingness-to-Pay for V2V			X	X	
Pavement Condition Measures and Utility Assessment	X	X	X	X	X
Safety and Human Factors of Adaptive Stop/Yield Signs Using Connected Vehicle Infrastructure	X			X	

- Publications, conference papers, presentations: Nothing to report yet, but we did have ITSA representation this year, just not on this research that has recently been approved.
- Websites: (<http://www.connectedvehicleinfrastructure-utc.org>)
- Technologies or technology assessments; databases, software or models: Nothing to report yet.
- Outreach activities:
235 Open House individuals;

School Day numbers:

School Name	St. John Neumann Academy	Penn Forest Elementary	Gilbert Linkous Elementary	Blacksburg High School	Northside Middle School	William Fleeming High School	Nelson Middle School	Totals:
Grade / Age	3rd and 4th (10-12)	4th Grade (11/12)	1st Grade (7/8)	11th and 12th (16-18)	6th Grade (12/13)	High School Drivers Ed (16-18)	6th Grade (12/13)	
Private / Public	Private	Public	Public	Public	Public	Public	Public	
# Kids	21	88	20	38	40	75	33	315
# Adults	8	8	1	4	1	6	4	32
# Buses	6 cars/vans	2	1	1	1	2	1	8
Drove/Rode on Smart Road	Yes	Yes	Yes	Yes	Yes	Yes	Yes	315
Walked in Smart Road Bridge	No	No	No	Yes	No	No	Yes	71
Watched Study Videos	Yes	Yes	Yes	Yes	No	Yes	Yes	275
Visited Control Room	Yes	Yes	Yes	Yes	Yes	Yes	Yes	315
Visited Instrumented Vehicles	Yes	Yes	Yes	Yes	Yes	Yes	Yes	315
Driver's Ed Training	No	No	No	Yes	No	Yes	No	113

Students Learned About:

- Distracted Driving
- Connected Vehicles
- Drowsy Driving
- Texting Ban
- Bridge and Road Construction
- Materials and Infrastructure
- Weather Creation (Chemistry)/ Water use on the Smart Road (Environment)
- Driver's Education (a special course for high school students)
- Engineering and Human Factors Research

- Courses and workshops; patents filed or issues, licenses: Nothing to report yet.

Special Reporting Requirements

If there are any special reporting requirements specified in the award terms and conditions (do not think this is the case for CVI-UTC).