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PROGRAM PROGRESS PERFORMANCE REPORT

Submitted to the Office of the Assistant Secretary for Research and Technology

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Signature:  |
Penny Eickemeyer, Associate Director for Research, UTRC

CONSORTIUM MEMBERS

City University of New York, Clarkson University, Columbia University, Cornell University, Hofstra University, Manhattan College, New Jersey Institute of Technology, New York Institute of Technology, New York University, Rochester Institute of Technology, Rowan University, Rensselaer Polytechnic Institute, Rutgers University, State University of New York, Stevens Institute of Technology, Syracuse University, The College of New Jersey, University of Puerto Rico

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This report will cover UTRC's three mission areas: Research, Technology Transfer, and Education for activities that occurred under the Grant# DTRT13-G-UTC32 during this reporting period.

1. ACCOMPLISHMENTS

A. Goals and objectives

- a) **Research:** To support the USDOT Strategic Goals and to advance the state of practice in planning and management of regional transportation systems; the research program consists of both agency-initiated and faculty-initiated studies
- b) **Education and workforce development:** To improve the knowledge base and approach to problem solving of the region's transportation workforce
- c) **Technology transfer:** To increase the awareness and level of information concerning transportation issues facing Region 2 to the education, research and practicing community; disseminate project reports, studies, analysis, and use of tools to the community; and provide unbiased information and testimony to decision-makers concerning regional transportation issues consistent with the UTRC theme.

B. Accomplishments under these goals

a) Research

New Projects -2016-17

UTRC issued a new RFP for faculty-initiated projects under Grant # DTRT13-G-UTC32 in February 2016. New projects were awarded in July 2016. The following is the list of these of newly-funded projects.

- Accelerated Aging of Asphalt by UV-Oxidation (Manhattan College)
- Activity-Based Approach for the Design of Sustainable Area and Cordon Pricing Schemes (UPR)
- Adaptive Evacuation Transportation Planning Under Uncertainty-SUNY Binghamton
- Approach to Blast Resistant Design of Aging Transportation Structures with Little or No Stand-Off Distance (Manhattan College)
- Crowdshipping: Evaluating its Impacts on Travel Behavior (CUNY)
- Deaf and Hard-of-Hearing Drivers: Making the Highways Safer for Everyone(RIT)
- Dynamic Bus Routing Problem for Evacuation (SUNY Buffalo)
- Effects of Foreign Participation in U.S. High Speed Rail Projects(CUNY)
- The Effect of Optimization Strategy and Adoption Rate on V2X Technology Environmental Impact (RIT) Evaluation of Simulation Models for Road Weather Information System (Rowan)
- Incorporating Probe Vehicle Data to Analyze Evacuation Route Resiliency (TCNJ)
- Improve Congestion Performance Measures via Conflating Private and Public Information Sources (NJIT)
- Inferring High-Resolution Individual's Activity and Trip Purposes with the Fusion of Social Media, Land Use and Connected Vehicle Trajectories (SUNY Buffalo)

- Investigating Public Opinions towards Emerging Transportation Technologies and Service Forms – (RPI)
- Investigation of Boundary Pressures and Internal Stresses in Geofoam Blocks (Syracuse)
- Managing the Daily Operations of a Bike Sharing System Using Mobile Stations – (SUNY Buffalo)
- Mitigation of Transportation Induced Vibration Using Seismic Metamaterials (SUNY Stony Brook)
- Mobile Bridge Scour Monitoring Using Autonomous Underwater Vehicle (Manhattan College)
- Portable and Integrated Multi-Sensor System for Data-Driven Performance Evaluation of Urban Transportation Networks (NYU)
- Potential Hydrodynamic Loads on Coastal Bridges in the Greater New York Area due to Extreme Storm Surge and Wave(CUNY)
- Recommendations for Improving Fire Performance of Steel Bridge Girders (Manhattan College)
- Securing Inter-Vehicular Networks with Time and Driver Identity Considerations (NYIT)
- Simulation of Automated Vehicles' Drive Cycles (SUNY New Paltz)
- The socialization of travel: the effects of traveler social networks on resiliency in traffic networks(RIT)
- The Spatial Effect of Socio-Economic Demographics on Transit Ridership: a Case Study in New York. (Manhattan College)
- Techniques for Efficient Detection of Rapid Weather Changes and Analysis of their Impacts on a Highway Network(SUNY Albany)
- Urban Travel Time Variability: Spatio-Temporal Analysis for New York City (SUNY Stony Brook)
- Using visual information to determine the subjective valuation of public space for transportation: application to subway crowding costs in NYC-(Cornell)
- Utilizing Digital Exhaust from Smartphone Applications for Transportation Planning, Continuous Measurement and Market Analysis (CUNY)

The following projects continued under this grant.

- Alkali Silica Reaction (ASR) In Cement Free Alkali Activated Sustainable Concrete (Clarkson)
- An Agent-Based Disaster Response Inference Model for Assessment of Transportation Risk under Extreme Events (CCNY)
- An Examination of Commercial Vehicle Access to Residential Buildings in New York City (CCNY)
- A Probability-Based Approach for Assessment of Roadway Safety Hardware (Manhattan College)
- Assessing NJ Transit's Mobile App for Users' Receptiveness (CCNY/NJDOT)
- Building a Sense of Place in an Information Era: Accessibility, Connectivity and Travel (RIT)
- CIDNY Task 2 - Develop a multi-agency/multi modal construction management tool (Polytechnic Institute of NYU, CCNY)

- CIDNY Task 5 - Develop a Comprehensive Guide to Signal Timing, New Detection and Advanced Signal (Polytechnic Institute of NYU, University at Buffalo)
- CIDNY Task 6 - Strategic ITS Deployment Plan for New York City (CCNY, Stony Brook University)
- CIDNY Task 7 - Research on Pedestrians and Cyclists Safety Using ITS Technology in NYC (Polytechnic Institute of NYU)
- CIDNY Task 8 - Develop Data Storage and Access Platform for MTA Bus Time Data (Polytechnic Institute of NYU)
- Computational Synthesis of High-Performance Non-Pneumatic Tires (Stony Brook University)
- Developing A Macroscopic Decision Making Tool For Emergency Evacuation Planning (RPI)
- Development of a New, Effective and Low-cost Media for Sustainable Management of Polluted Road Storm-water in Highly Urbanized Areas (Manhattan College)
- Do Consumer Expenditures Affect Demand for Driving (Cornell)
- Developing Generalized Linear Mixed Models For The Strategic Highway Safety Planning Process (UPR)
- Development of a new connected eco-driving system at signalized intersections with adaptive signal (Polytechnic Institute of NYU)
- Development of Software for Analysis of Traffic Signal Support Structures-RPI (request a quarterly)-Michael Symans
- Disaster Relief Vehicle Routing Under Uncertainty (Binghamton University)
- Drainage Identification Analysis and Mapping, Phase 2 - NJIT
- Efficacy of the Bacteria Encapsulation Concrete Self-Healing Method in a Harsh Environment (Manhattan College)
- Evaluating the Impacts of Real-Time Information on Subway Ridership in New York City (CCNY)
- Heterogeneous Regional Traffic Signal Control (SUNY at Buffalo)
- Freight costs at the curbside
- Improving Cross-Frame Design to Reduce the Effects of Skew in Steel I- Girder (TCNJ)
- Hunts Point Terminal Market: The Feasibility of Waterborne Transportation (SUNY Maritime, CCNY?NYSERDA)
- Impact of Polymer Modification on Mechanical and Viscoelastic Properties of Binders (Rowan)
- Induced Emissions and Energy Use in Transportation: Use of Social
- Media Feeds as an IM Support Tool (CCNY, Stony Brook University/ NYSERDA)
- Innovative Techniques for Maintenance, Repair and Reconstruction (MRR) of Asphalt Roadways (Syracuse University)
- Innovative Travel Data Collection - Planning for the Next Two Decades (University at Albany/ NYMTC)
- Measuring Parking Intrusion in New York City Neighborhoods using Parking
- Tickets and Vehicle Plate Registration Data (NYU)
- Market Potential For Battery Electric Vehicles Based On Multi-Day Activity-Travel Patterns (University at Buffalo)

- Monitoring Infiltration Capacity of Different Types of Permeable Pavement (Manhattan College)
- Public Transit and Mandatory Evacuations Prior to Extreme Weather Events in New York City (NYU)
- Regional Financing Options Study (CUNY (CSI)/NYMTC)
- Risk analysis of autonomous vehicles in mixed traffic streams (Rowan)
- Secure and Private Sensing for Driver Authentication and Transportation Safety (NYIT)
- Self-Heated Pavements (Stony Brook University)
- Smart Bus System under Connected Vehicles Environment (NJIT)
- Spectral Based Controllability-preserving Pedestrian Evacuation Network Synthesis Using Multilayered Estimation Models in Real-time (SUNY Maritime)
- Transportation Infrastructure Robustness: Analysis and Measurement (CCNY)
- Understanding Transit Finance: An Analysis of Transit Funding Around the World (Columbia)
- Using Mobile Computers to Automate the Change Order Decision Making Process and Improve Total Time and Cost Predictions on Highway Construction Projects (UPR)
- Worker Safety Issues of WiFi Devices (TCNJ/NJDOT)

The following projects were completed during this reporting period:

Several final reports, particularly from projects begun in 2014 have been submitted.

Final Reports submitted during the reporting period include:

- Characterizing and Quantifying the Shrinkage Resistance of Alkali-Activated (Cement-Free) Concrete and Evaluating Potential Methods for Reducing Early-Age Cracking in Pavements and Bridges (Clarkson)
- Environmental Impacts of Oil and Gas Brine Applications for Dust and Ice Control in New York (Manhattan College)
- Investigating Temporal Effects on Truck Accident Occurrence and Severity level in New York City(RPI)

Examples of Activity this period:

Agency-sponsored NJDOT

- **Drainage Identification Analysis and Mapping, Phase 2 (NJIT)**

Drainage Identification, Analysis and Mapping System (DIAMS) is a computerized database that captures and stores relevant information associated with all on-ground and under-ground hydraulic structures belonging to NJDOT. Approximately 90% of the project is complete, DIAMS system is expected to be installed on NJDOT computers during the next quarter.

- **Assessing NJ TRANSIT's Mobile App for Users' Receptiveness to Geotargeting**

The overarching goal of this project is to assess NJ TRANSIT customer receptiveness to geotargeting, which refers to the practice of offering customized content to users based on the location of their mobile device when used to access an application. A survey will be

conducted of current NJ TRANSIT app/MyTix users to understand customer reactions and receptiveness to geo-targeting through its mobile app. Specifically, NJ TRANSIT would like to explore whether customers have concerns about privacy or intrusiveness or whether certain types of notifications within this platform would be more or less acceptable.

During the reporting period, focus groups were held to discuss NJ TRANSIT's app, location services and geotargeting. Substantial progress was also made on designing the survey questionnaire.

NYCDOT/NYS DOT

- **CIDNY- Coordinated Intelligent Transportation Systems Deployment in New York City**

(FHWA-sponsored) Quarterly meetings were held in January and April. Research is on-going. Each CIDNY project, listed as a separate task, is described below.

- **Task 2- Develop a multi-agency/multi modal construction management tool (Polytechnic Institute of NYU, CCNY)**

The objective of this research project is the evaluation of the Construction Impact Analysis (CIA) tool designed and developed by Washington State Department of Transportation (WSDOT).

During this reporting period, interviews were held with NYSDOT and NYMTC and recommendations for requirements for NYCDOT were included in the draft report based on these interviews.

- **Task 5- Develop a Comprehensive Guide to Signal Timing, New Detection and Advanced Signal (Polytechnic Institute of NYU, University at Buffalo)**

This project is to develop a comprehensive guide to signal timing, new detection technologies and advanced signal timing concepts applicable in New York City.

The final report is almost complete; comments to be received next quarter.

- **Task 6 – Strategic ITS Deployment Plan for NYC (CCNY, NYU)**

This project is to review and update the strategic ITS Deployment Plan for New York City regarding three key areas required for ITS deployment in the City: NYCDOT ITS Implementation Strategy, the NYCDOT Five-Year ITS Deployment Plan and the NYC Sub-Regional ITS Architecture (NYCSRA).

During the quarter, work continued on the key points for the draft strategic plan document and this was presented to NYCDOT and other stakeholders.

- **Task 7- Pedestrians and Cyclists Safety Using ITS Technology in NYC (NYU)**

The objective of this task is to research various ITS technologies for implementation in NYC for bike and pedestrian safety and make recommendations about where and when they should be placed.

Work progressed on the draft report rating countermeasures for application and implementation.

o **Task 8- Develop Data Storage and Access Platform for MTA Bus Time Data**

This project has three main objectives:

1. Develop efficient data acquisition, storage, maintenance and querying procedures to automate and improve the overall process of using MTA bus data.
2. Create a web-based application that takes advantage of the MTA's on-going in house data development efforts as well NYU CUSP's extensive resources and expertise in the area of big data management.
3. Provide recommendations to incorporate this developed app and its functionalities into existing NYCDOT protocols and operations.

The project is approximately 97% complete; the software tool is developed and tested.

UTRC-sponsored:

Enhancing understanding of the economic impacts of transportation investment

• **Do Consumer Expenditures Affect the Demand for Driving?(Cornell)**

This project is expected to make three contributions to our understanding of travel behavior. First, assembling neglected historical data will provide an unprecedented view of how American travel has evolved over the last 80-100 years. Second, using panel data that begins in the 1960s, the project will test the idea that people who come of age when driving is more expensive will drive less even after the economy has recovered. Third, by incorporating long-run data on consumer sentiments about both vehicles and the broader economy, the project will shed light on an important contemporary question: to what extent are attitudes about vehicles and driving formed independently of attitudes about broader economic conditions, and economic conditions themselves?

During this period a survey of consumer finances (SCF) has been examined for historical trends in American car ownership. This has involved a substantial data effort. The other project examined the historical correlates of neighborhood distress in Cleveland, OH.

Planning, monitoring, and implementation of technologies to understand and improve multi-modal transportation safety

• **Secure and Private Sensing for Driver Authentication and Transportation Safety**

One goal of this research is to explore how organizations can take full advantage of heterogeneous sensing by sharing and analyzing sensor data from different infrastructures in a secure and privacy-preserving manner.

During the first half of this reporting period, the researchers continued to analyze the data from a small scale user study. From these results, a more detailed driving task and environment were developed for the simulation.

Preparations were also begun for a larger scale user study to begin in the near future.

During the second half of the reporting period, an initial investigation was begun into the plausibility of identifying drivers based on the manner in which they operate a vehicle. The preliminary analysis concludes that it is possible to authenticate a driver in less than 2.5 minutes with 95% confidence and a false positive rate of less than once per driving day. In addition, an in-depth survey of the current state-of-the-art of transportation security issues, related defenses, and related research into smart transportation systems was conducted. A follow-up study of driving behavior to collect additional features and involve a broader human subject population was also initiated.

- **Risk Analysis of autonomous vehicles in mixed traffic streams**

The following work was undertaken during the reporting period:

The research team combined two fault trees that considered (1) vehicular component failure and (2) transportation infrastructure component failure, to model the failure risk of autonomous vehicle operations in a real world mixed traffic scenario.

The research team is in process of identifying risk minimization strategies to minimize failure risks associated with autonomous vehicles. The team is also conducting benefit cost analysis (BCA) of these risk minimization strategies.

The research team received approval for online survey from Internal Review Boards (IRB).

- **Heterogeneous Regional Signal Control (Buffalo)**

One critical task in regional traffic signal operations is how to establish different objectives and policies for varying arterial or subnetwork types.

A typical urban network usually consists of different subnetwork types, such as the central business district (CBD), suburban areas, and rural areas. The heterogeneous objective naturally arises for traffic signal operations on such different subnetworks, but there is little in the literature that explicitly addresses the signal control problem in heterogeneous subnetworks. The objective of this project is to develop a mathematical framework to model a heterogeneous objective traffic signal control for different subnetworks.

During this period, the researchers developed delay functions (payoff functions) for a two-intersection arterial. The optimal offset for minimizing delay in each intersection and both intersections were derived. Upon further microscopic simulation with VISSIM, the researcher found that the payoff function did not fit the actual delay very well. Another approach based on a traditional bi-level optimization model was therefore determined. This had traffic assignment and signal control in the same formulation.

Planning, monitoring, and implementation of communications and other technologies to understand and improve multi-modal transportation safety

- **Risk Analysis of Autonomous Vehicles in Mixed Traffic Streams**

The evolution in computing, communication and vehicular technologies has resulted in connected and autonomous vehicles. Due to its potential of significantly reducing highway crashes, fatality rates and improving quality of life, the autonomous vehicles are viewed as the next revolution in the transportation system by both private sector and public agencies. As the National Highway Transportation Safety Administration (NHTSA) moves toward mandating vehicle-to-vehicle (V2V) connectivity for new vehicle models in the next few years, automotive industries are now increasing their efforts to develop V2V enabled vehicles.

The research team accomplished the following during this reporting period:

- Combined two fault trees that considered (1)vehicular component failure and (2) transportation infrastructure component failure, to model the failure risk of autonomous vehicle operations in a real world mixed traffic scenario
- Began identifying risk minimization strategies to minimize failure risks associated with autonomous vehicles. The team is also conducting benefit cost analysis (BCA) of these risk minimization strategies.
- Received approval for the online survey from the Internal Review Boards

Infrastructure design, monitoring, inspection, and management to ensure a State of Good Repair

- **Alkali Silica Reaction (ASR) in Cement Free Alkali Activated Sustainable Concrete**

In this quarter, the researchers conducted Task 3 of the study, a characterization study to derive ASR reaction mechanisms in autoclaved aerated concrete (AAC)

- **Self-heated Pavements**

The ultimate goal of this project is to construct self-heated pavements for ice-free pavement surfaces in winter. Ice will not form or accumulate on roads if the pavement temperature is maintained above freezing — with an adequate margin — at all times. In order to heat pavements using a sustainable and clean energy source, this project targets the use of the thermal energy stored within soil layers in the top 500 ft. of the ground — known as the shallow geothermal energy. The idea is to bury small diameter loops in pavement’s base layer which will be connected to ground loops installed — either vertically or horizontally — at the highway sides. The thermal energy from the ground will be collected and used to heat pavements via a geothermal fluid circulated using a circulation pump. The circulation pump will be energized using a solar system composed of solar panels charging an electrical battery.

The research team finished all modeling tasks this quarter. Research team had presented the work involved in this project in several technical conferences and workshops to local and state agencies

- **A Probability-Based Approach for Assessment of Roadway Safety Hardware**

This project involves exploratory research to investigate a novel probability-based analysis method for understanding and assessing the performance of roadway safety hardware (RSH) and roadway facilities under vehicle crashes. The failures of RSH systems such as median barriers, guardrails, bridge rails, terminals, and crash cushions subjected to vehicle crashes will be investigated, and the focus of this study is on concrete barriers.

During this quarter, the following was accomplished:

- Post-processing of concrete barrier crash responses were completed;
- Metamodeling analyses of crash responses were completed;
- Reliability analyses have been performed based on the available metamodels;
- Writing of draft final report has begun.
- Innovative Techniques for Maintenance, Repair, and Reconstruction (MRR) of

Asphalt Roadways (Syracuse)

The objective of this project is to 1) investigate various innovative maintenance, repair, and reconstruction techniques that can be used to improve condition levels of asphalt roadways in consideration of economic, social, and environmental impacts, 2) identify the important factors that affect the decision making procedures for selecting the most appropriate maintenance, repair, and reconstruction technique for asphalt roadways, and 3) develop a high-level decision support tool that will allow evaluation of maintenance, repair, and reconstruction alternatives for asphalt roadways.

During this quarter, the research team worked on and submitted a paper to be presented at the TRB Annual Meeting. Also, initial findings of the research was presented at the Eighth International Conference on Maintenance and Rehabilitation of Pavements (MAIREPAV) in Singapore (27-29 July 2016).

Development of multi-modal freight policy, planning, and logistics to promote freight productivity, efficiency, and sustainability

- **An Examination of Commercial Vehicle Access to Residential Buildings in New York City**

This study will identify what, if any, unique challenges exist for commercial vehicle access to residential buildings, and what externalities may result from differences in parking behavior at these locations. Findings from this analysis will be evaluated in the context of a growing body of international city logistics solutions to identify potential urban policy, parking regulation, and supply chain approaches to better accommodate goods deliveries to residential buildings in New York.

During the reporting period, data analysis and collection were complete.

Securing transportation systems and improving planning for and response to extreme events

- **An Agent-Based Disaster Response Inference Model for Assessment of Transportation Risk under Extreme Events**

Recent events such as Hurricane Irene and Superstorm Sandy have revealed vulnerability to intense precipitation within the transportation sector. For regional resiliency, one has to understand the exposure of regional network/systems to correlated risks or simultaneous extremes, which can then support emergency management division in creating more effective disaster relief and response systems. Current disaster relief studies mostly focus on simulating traffic flow on the network or evaluating different dispatching and vehicle routing scenarios in response to disaster; it is not prognostic with underlying climate information. There is a necessity to understand the underlying reasons which generates the spatial-temporal demand. There is also a necessity to and forecast, based on climate, individual level behavior and their nodal functions during a simultaneous extreme rainfall event. During the quarter, the researchers developed a model to predict ridership for subway stations in Manhattan when rain falls. They developed a hierarchical Bayesian Poisson Regression Model to predict ridership using the time of the day and previous hours of rainfall. Results indicated that ridership has significant negative sensitivity to rainfall for stations with residential land-use and an insignificant decrease for stations with commercial land-use.

- **Public Transit and Mandatory Evacuations Prior to Extreme Weather Events in NYC**

This project is to evaluate public transit services in areas considered to be at high risk for flooding in New York City and to provide a tool that can help transportation planners and city officials improve these services during evacuations. The research will also look at the characteristics of public transit in Zone 1 evacuation areas in relation to the socioeconomic characteristics of the communities that live there.

During this period, database organization and refinements for transit locations, flooding, and selected demographic data have been completed. The data analysis plan and analysis of the data is continuing.

- **Disaster Relief Vehicle Routing under Uncertainty**

During the quarter, the research team completed the literature review, and model and algorithm development. A conference paper was presented, and preliminary results were produced. A journal paper is expected to be submitted during the next reporting period.

b) Education and workforce development

During this period, UTRC accomplished the following:

- NYMTC/UTRC September 11th Memorial Program Academic Initiative:
 - The two 2015-16 interns gave their final presentations during a brownbag lunch presentation on September 14, 2016.
 - **NYMTC Brown Bag Seminar**
September 14, 2016, NYMTC Office, NY

On September 14th, 2016, NYMTC hosted its 10th annual September 11th Memorial Brown Bag Lunch student presentations. September 11th Program Scholars **Sabiheh Faghieh** and **Di Liu** presented the results of the research they each conducted for NYMTC over the 2015-16 academic year. The September 11th Memorial Program for Regional Transportation Planning is a living memorial to the three NYMTC staff members – Ignatius Adanga, Charles Lesperance and See Wong Shum -- who died in the terrorist attacks on the World Trade Center on September 11th, 2001. The program provides financial assistance to students for projects and research beneficial to NYMTC's planning process. The Program is a means to educate and motivate those who are interested in transportation technology and planning.

Di Liu recently received a Master's Degree from New York University's Robert F. Wagner School of Public Service. She presented her research on enhanced integration of regional environmental planning and transportation planning. The tangible result of her work is a resource document that will assist NYMTC's staff and members with that integration as a means of streamlining the programming and implementation of transportation improvement projects.

Sabiheh Faghieh, currently a PHD candidate in Transportation Engineering at the City College of New York, presented her research on the challenges of conducting surveys for activity based models. As part of this work, she contacted MPOs and state transportation departments across the nation in order to understand how they conduct their travel surveys. Through her investigations, Sabiheh has provided NYMTC with valuable recommendations on how to improve the effectiveness of its future travel surveys. NYMTC thanks both Di Liu and Sabiheh Faghieh for their contributions to the regional planning process.

Di Liu:

[Guidance on Integrating Environmental Issues in the Transportation Planning Process](#)

Sabiheh Faghieh:

[Challenges of Conducting Surveys for Activity-Based Travel Demand Models](#)

- The two new 2016-17 interns began their internships in September 2016. These internships include:
 - Automatic Vehicle Location Data Mining and Visualization and Dashboard Functionality for the New York City Department of Transportation
 - Transit Signal Priority Report for NYMTC has been drafted, application has been posted on the UTRC website, and offerings for internship positions have been provided.
- Advanced Institute for Transportation Education (AITE):
 - Five internships are underway for 2015-16
 - Recipients have been fulfilling the requirements (GPA, enrollment of Transportation Master Degree) to continue receiving the scholarship.

c) Technology transfer

Past Events

NYIT Workshop on Cyber Security and Privacy for Transportation Workshop

September 22, 2016, New York Institute of Technology

UTRC co-hosted a workshop in conjunction with NYIT's Seventh Annual Cybersecurity Conference. It started with keynote remarks by Edward Fok, Transportation Technologies Specialist at the Federal Highway Administration of the U.S. Dept. of Transportation. He briefly described the cyber challenges faced by the transportation community, stating that many of the surface transportation systems are still protected by the same pin-type tumbler lock used when The Brady Bunch was on the air. In this presentation, Mr. Fok shared some initial ideas on how operating agencies and industry can address this highly dynamic challenge, including the implementation of open source computational platforms supervised by cloud-based, real-time predictive management systems. He also discussed how he is working with transportation agencies across the United States to guide them into implementing cybersecurity protocols and best practices.

ITS Travel Information Systems & Mobile Applications For Enhanced Transport

December 10, 2016, New York Institute of Technology

UTRC sponsored a half day event; ITS Travel Information System & Mobile Applications for Enhanced Transport, organized by NYIT on December 10, 2016 at the New York Institute of Technology. The event speakers presented on how innovations in ITS and apps for mobile devices are transforming the way traffic and transit data are communicated to customers in real time. While some innovations are quickly adopted by end-users, in particular those focusing on vehicle technologies /software; others require infrastructure investments and coordination with city and transportation planners before being implemented. This workshop focused on emerging technologies that increase multi-modal transport options and reduce traffic congestion, and associated emissions, and how innovations align with current transportation plans, and serve different constituencies, including people with special mobility needs.

IATR 25th Annual Conference

September 22-24th, 2016, San Francisco, California

The International Association of Transportation Regulators (IATR)'s 29th Annual Conference was held on September 22-25 at San Francisco, CA. The theme of IATR's 29th Annual Conference was "21st Century Transportation Regulation - A Vision for Shared Mobility, Multi-Modal Integration & Governance."

The International Association of Transportation Regulators (IATR) is a growing peer group of taxi, limousine and for-hire transportation regulators, dedicated to improving the practice of licensing, enforcement and administration of for-hire transportation through the sharing of information and resources.

UTRC staff actively participated in the organization and planning of the 2016 IATR annual conference. The conference was very well attended by international regulators and many presenters shared their best state/city practices with attendees.

During the conference, IATR also hosted its first ever Hack-a-thon. The IATR hack-a-thon theme was broad enough to cover many angles and issues, and was intended to involve broad data sets. The theme of the first-ever IATR hack-a-thon was based on the focus of the IATR's 29th Annual Conference being held in San Francisco and hosted by the San Francisco Municipal Transit Agency (SFMTA): "21st Century Transportation Regulation – A Vision for Shared Mobility, Multi-Modal Integration & Governance."

The participating organizing academic institutions included:

- the United States Department of Transportation's University Transportation Research Center (Region 2) at The City College of New York, of The City University of New;
- the University of California, Berkeley;
- NYIT (NYC and Abu Dhabi campuses)
- Purdue University
- New York University
- Government Agency & Municipal Supporters include:
- NYC Taxi & Limousine Commission;
- District of Columbia Department of For-Hire Vehicles;
- City of Calgary;
- Philadelphia Parking Authority;
- TransAd, Abu Dhabi, UAE; and
- San Francisco Municipal Transportation Agency (SFMTA).

Private Company Sponsors & Other Organizations:

- International Road Transport Union (IRU);
- Flywheel;
- Zendrive;
- Datatrack 247;
- CabConnect

- City Innovative Foundation
- Karhoo

There were several proposals submitted which are going through the review process and the winners will be announced by the end of October. For more information on the IATR organization and its membership, please visit the website: www.iatr.global

UTRC at the New York Metropolitan Transportation Council Meeting

September 7, 2016, Graduate Center, CUNY

The University Transportation Research Center's Staff attended the NYMTC's Council Meeting that was held on September 7th, 2016 at the Graduate Center, CUNY. The Transportation Secretary Anthony Foxx delivered the keynote remarks at the meeting. The Secretary touched on the need for a regional approach which crosses jurisdictional and state boundaries. He indicated that such coordination was needed to develop working relationships and potential financial solutions.

During the meeting, UTRC's director, Dr. Camille Kamga NYMTC's delivered a presentation on the September 11th Memorial Program for Regional Transportation Planning, in recognition of its tenth year of providing financial assistance to students for projects in both academic and public policy arenas as a way to educate and motivate those who are interested in transportation technology and planning. The Program's Academic Initiative is designed to foster the academic and professional development of students by providing them with opportunities to participate in innovative research and planning projects. It is administered by the University Transportation Research Center (UTRC).

The program is a living memorial to the three NYMTC staff members who perished in the attacks on the World Trade Center on September 11, 2001: **Ignatius Adanga, Charles Lesperance, and See Wong Shum.**

TransportationCamp NYC 2016

September 24, 2016 at the City College of New York, CUNY

University Transportation Research Center and Young Professionals in Transportation hosted the TransportationCamp NYC 2016 the City College of New York on September 24, 2016. The TransportationCamp NYC 2016 fostered open conversation and collaboration between all parties interested in mobility and the radical changes the near-future promises in transportation.

The transportationcamp assembled planners, software developers, engineers, students, dreamers, and professionals for an exciting day of "un-conferencing." Unlike a traditional conference, the specific session topics were determined by participants, which provided each attendee an opportunity to lead and shape the event.

Live Demonstration of Connected & Automated Vehicle Operations

June 9-10, 2016, Saratoga Springs, NY

UTRC organized a live demonstration of Connected & Autonomous Vehicle Operations on June 9-10, 2016 during the Intelligent Transportation Society of New York (ITS) annual conference.

Southwest Research Institute (SwRI) has developed innovative technology on use of Connected and Automated Vehicles to enhance workzone safety. SwRI offered a VIP opportunity to ride along in fully automated SwRI vehicle during this demonstration.

UTRC also hosted an Unmanned Aerial System (USA) demonstration on June 9th during the ITS annual conference. This demonstration was done by NUAIR Alliance, a collaboration of over 90 industry, government, and academic organizations working toward safe integration of Unmanned Aerial Systems into the US National Airspace System.

Unmanned Aircraft Systems (UAS) increase human potential, allowing us to execute dangerous or difficult tasks safely and efficiently. Whether its improving agricultural output, helping first responders, or helping manage transportation infrastructure, UAS are capable of saving time, saving money, and most importantly, saving lives.

The videos of both of these demonstrations are available on UTRC's Vimeo Channel.

City Logistics in Practice: The UPS 43rd Street Distribution Facility, New York

September 20, 2016, UPS 43rd Street Facility, NY

UTRC team; Dr. Camille Kamga, Dr. Alison Conway, Dr. Lisa Douglass, Penny Eickemeyer, and Dr. Jean-Paul Rodrigue visited the UPS 43rd Street Distribution Facility. UPS representatives; Timothy Banoff, Professional Services Marketing, Jerome Ferguson, Industrial Engineering, and Michelle Shen, Small Business Marketing welcomed the team and provided them a tour of the facility.

The visit started up by a 2 hours meeting with 3 UPS representatives that provided an overview of the facility and key UPS strategies concerning urban freight distribution and the UTRC group presented some key objectives of the MetroFreight project. Then, a visit of the facility took place, including the loading and unloading docks, vehicle and sorting equipment and the main operational methods used by the facility. The facility is one of the oldest still in operation, using a combination of mechanized and labor sorting processes. The facility could be automated, but UPS is reluctant to do so since it would impact operations in a strategic market and the current operations are efficient and well-tuned. A line of communication has been established with UPS and it remains to be seen to what extent UPS will be able to provide information and data to assist city logistics research endeavors.

Upcoming Events

UTRC Transportation Tech Summit

November 15, 2016, New York Institute of Technology

The University Transportation Research Center (UTRC) will host the 2016 Annual Technology Summit on November 15, 2016 at the New York Institute of Technology (NYIT), located at 1871 Broadway, New York, NY 10023. This unique summit will bring together leading experts, academics, practitioners, industry stakeholders and advocates to discuss the rapidly changing and expanding world of transportation technology innovative solutions and public policymaking implications. Presentations are welcome to explore how cutting edge intelligent transportation systems, big data aggregation, and innovative transportation technology solutions promote efficiency, safety, security

and sustainability goals, as well as the impact on broader intermodal and multimodal transportation considerations.

Future and forward thinking innovative concepts are encouraged, and the pragmatic political reality of various movements (such as climate change/environmental policies and safety initiatives for reduced traffic fatalities), should be analyzed to ascertain whether society is ready to keep pace with the implementation of such technology.

Connected & Autonomous Vehicles Symposium

December 8-9, 2016, New York University, Brooklyn, NY

UTRC's fifth symposium on connected and autonomous vehicles will be held in New York City (on the campus of NYU Tandon School of Engineering in Brooklyn) on December 8-9, 2016.

This year's event will focus on Social, Economic, Environmental & Safety Benefits of Connected and Autonomous Vehicles. New York City's current efforts to demonstrate vehicle-to-vehicle and other communication technology as part of USDOT's Connected Vehicle Pilot Deployment Program will be highlighted at this event. We are very pleased to be able to present this exciting work along with talks on efforts at the other two USDOT deployment locations in southern Wyoming and Tampa, Florida.

Our plans include panels on Autonomous Vehicles for Smart Cities; Connected Vehicles for Transit; Safety and Long-Term Impacts of CV/AV; and CV/AV for Freight.

UTRC and our co-sponsoring partners, NYU Tandon School of Engineering; NYU Center for Urban Science and Progress; Princeton University; SUNY Polytechnic Institute; and Transportation Informatics (TRANSINFO) at the University at Buffalo, would be delighted if you could spend some time with us. Information on our prior symposiums are available at

www.connectedvechileworkshop.com

Newsletter publications

UTRC Research News, for the Fall 2016, will be released in the week of October 31st, 2016.

d) Opportunities for Training and Development

Our seminars and workshops are designed to educate the transportation community on current issues in policy and best practices as well as foster meaningful discussion on these topics. We also provide funding to the September 11th Memorial Program to select current students to serve in internship positions in regional and local agencies to enhance their educational experience.

- NYSAMPO

UTRC, through the CUNY School of Professional Studies is continuing to develop and offer courses per NYSAMPO's needs for training of staff from MPOs throughout New York State.

C. Dissemination of results:

- Quarterly Reports on project progress
- Completed final reports

D. Plans for next reporting period:

- Video clips on completed projects are expected to be posted during the next reporting period. These projects include:

2. PRODUCTS

Final reports, conference papers.

3. Participants and Collaborating Organizations						
Partner (University)	Agency Sponsor	Location	Project(s) (# funded)	Contribution	Other Collaborators	Role
Clarkson	N/A	Potsdam, NY	Faculty initiated -1(27),	research		
Cornell	N/A	Ithaca, NY	Faculty-initiated -2 (26) complete, 1 (27)	research		research
Cornell	NYMTC	Ithaca, NY	Agency-initiated-1(26)	Technical support		
Cornell	N/A	Ithaca, NY	Agency-initiated-1(28)	research		
Columbia	N/A	New York, NY	Faculty-initiated -1 (27) 1 (26)	research	Manhattan	research
CUNY:						
CCNY	N/A	New York, NY	Fac. Init 1(28)	Emerging scholar		
CCNY	N/A		Faculty-initiated-3(27) 1(28) 2(26) complete,	research	RPI	research
CCNY	NJDOT	New York, NY	Agency initiated-1	research		
CCNY	NYSERDA		Agency-initiated-3 (26), 1 (28)	research	SUNY Stonybrook	research
CCNY	NYSERDA		Agency-initiated (complete)	tech transfer		
CCNY	NYSDOT/NYSERDA		Agency-initiated	Research	StonyBrook, Maritime	Research, CIDNY
CCNY	NYMTC	New York	Agency	Tech support		
CSI/CUNY	NYMTC	New York	Agency-Initiated-1(27)	research		
CSI/CUNY	N/A	New York	Faculty-initiated-(28)	research		
John Jay College	N/A	New York	Faculty-initiated-(28)	research		

CUNY SPS	NYSAMPO		Agency-initiated	Workforce development		
Manhattan College	N/A	Bronx, NY	Faculty-initiated-3 (26), 1(28)	research		
Manhattan College	N/A	Bronx, NY	Faculty-initiated-4(28)	Emerging investigator		
NJIT	NYMTC	New York	Agency	Tech-Support		
NJIT	N/A	Newark, NJ	Faculty-initiated-1(27), 1(28)	research		
NJIT	NJDOT	Newark NJ	Agency initiated-1(26)	research		
NYIT	N/A	New York, NY	Faculty-initiated-1 (26). 1(28)	research		
3. Participants and Collaborating Organizations						
Partner (University)	Agency Sponsor	Location (see Appendix A)	Project(s) (# funded)	Contribution	Other Collaborators	Role
NYU	N/A	New York, NY	Faculty-initiated- 1-(27) 1(26)	research		
NYU		New York	1(27), 1(28)	Ed/Tech		
NYU/Tandon Sch. Engr.	NYCDOT, NYSDOT	New York, NY	Agency initiated-4	Research, CIDNY	CCNY(1), UB(1)	research
NYU/Tandon Sch. Engr	N/A	New York, NY	Faculty-initiated (28)	research		
RIT	N/A	Rochester, NY	Faculty-initiated-1 1(28)			
RIT	N/A	Rochester, NY	Fac. initiated. (2) -28	Emerging invest.		
RIT	N/A	Rochester, NY	Fac. Initiated-1-(27)	Edu/Tech		
Rowan University	N/A	Glassboro, NJ	Faculty initiated-, 1 (27), 1(28) 1(26)	research		
Rowan University	N/A	Glassboro, NJ	Faculty-initiated	Ed-tech		

RPI	NYSDOT NJDOT	Troy, NY	Agency-initiated - 2(27),	research		
RPI	N/A	Troy, NY	Faculty- initiated-1(27), 1 (28) 1(26)	research		
SUNY:						
Albany	NYMTC NYSDOT	Albany, NY	Agency-initiated-2	Research/ technical support		
Buffalo		Buffalo, NY	Faculty-initiated- 1(27)	research		
Buffalo		Buffalo, NY	Faculty-initiated 1(27)-2 (28)	Emerging invest		
Buffalo		Buffalo, NY	Fac. Initiated -2 (28), 1(26)	Educ/tech trans		
Buffalo	NYSDOT/NYCDOT		Agency-initiated 1 (26)			NYU
Binghamton		Binghamton, NY	Faculty-initiated-1	research		
Binghamton		Binghamton	Faculty-initiated- 1(28)	Emerg invest		
New Paltz		New Paltz, NY	Faculty-initiated- 1(complete)	research		
New Paltz	N/A	New Paltz, NY	Faculty-initiated- 1(28)	Emerging invest.		
Stonybrook	N/A	Stonybrook, NY	Faculty-initiated-1 (27), 1-(28)	research		
Stonybrook	NYSDOT/NYCDOT	Stonybrook, NY	CIDNY 2 (26)	research		
Stonybrook	N/A	Stonybrook, NY	Faculty-initiated(28)- 1	Emerging Inves.		
Maritime	NYSERDA	Throggs Neck, NY	Agency-initiated- 2(26)	Research	CCNY	research
Maritime	N/A	Throggs Neck, NY	Faculty-initiated-1	Research		

3. Participants and Collaborating Organizations						
Partner (University)	Agency Sponsor	Location (see attached)	Project(s) (# funded)	Contribution	Other Collaborators	Role
Syracuse	N/A	Syracuse, NY	Faculty -initiated-, 1 (28)	research		
Syracuse	N/A	Syracuse, NY	1(28)	Ed/tech		
The College of New Jersey	NJDOT	Trenton, NJ	Agency- initiated-1(27)	research		
The College of New Jersey	N/A	Trenton, NJ	1(28)	Emerg invest.		
University of Puerto Rico	N/A	Mayaguez PR	Faculty- initiated- 1 (27), 1 (26)	research		
UPR	N/A	Mayaguez PR	Faculty- 1 (28) initiated	Emerg invest		
Agency Partners:						
NYSERDA		Albany, New York				
NYMTC		New York, NY				
NYMTC		New York, NY				
NYSDOT		Albany, NY				
NJDOT		Ewing, NJ				
NYCDOT		New York, NY				
Port Authority of NY and NJ		New York, NY				
ITS-New York						
NYSAMPO						

Partner	Street	City, State, Zip
Clarkson	8 Clarkson Avenue	Potsdam, NY 13699
Cornell	Cornell University	Ithaca, NY 14853
CCNY	160 Convent Avenue	New York, NY 10031
John Jay College	524 W. 59th Street	New York, NY 10019
Queens College	65-30 Kissena Blvd	Flushing New York 11367
CUNY Graduate Center	365 5th Avenue	New York, NY 10016
NYIT		
NJIT	323 Martin Luther King Blvd	Newark, NJ 07103
NYU	726 Broadway #350	New York, NY 10003
NYU/POLY	6 Metrotech Center	Brooklyn, NY 11201
RPI	110 8th Street	Troy, NY 12180
RIT	One Lomb Memorial Dr	Rochester, NY 14623
Rowan	201 Mullica Hill Rd	Glassboro, NJ 08028
SUNY Binghamton		
SUNY Buffalo	12 Capen Hall	Buffalo, NY 14260
SUNY New Paltz		
Stony Brook	100 Nicolls Rd	Stonybrook, NY 11794
SUNY Maritime	6 Pennyfield Avenue	Throggs Neck, NY 10465
Stevens Institute of Technology	9th Street	Hoboken, NJ 07030
Syracuse University	303 University Pl #335	Syracuse, NY 13244
University of Puerto Rico	Puerto Rico, 65	Mayaguez 00860
Agencies:		
NYSDOT	50 Wolf Road	Albany, New York 12205
NYSERDA	17 Columbia Circle	Albany, New York 12203-6399
NYMTC	199 Water Street	New York, New York 10038
NYCDOT	55 Water Street	New York, New York 10041
NJDOT	1035 Parkway Avenue	Trenton, NJ 08625
NYCDOT	55 Water Street	New York, NY
PANYNJ	225 Park Avenue South	New York, NY 10003
ITS-NY	14 Loveland Court	Cranbury, NJ 08512
NYCT	2 Broadway	New York, NY 10004

Projects by Partner						
<u>Partner</u>	<u>Projects</u>					
USC/Volvo						
Clarkson	Alkali Silica Reaction (ASR) in Cement Free Alkali Activated Sustainable Concrete					
Columbia	Characterization and Modeling of Photon Absorption in Asphalt Materials	Understanding Transit Finance: An Analysis of Transit Funding Around the World	Intelligent Wireless Charging for Electric Buses in Smart City			
Cornell	Evaluating the Role of Private Investment in Life Cycle Management of NYS Infrastructure Assets	Analyzing Willingness to Improve the Resiliency of New York City's Transportation System	PPS-AQ and PPS-CMP hosting, maintenance, backup and technical support	Phase 2 Biological Control of Invasive Phragmites australis	Using visual information to determine the subjective valuation of public space for transportation: application to subway crowding costs in NYC	
CCNY	Feasibility of Lane Closures Using Probe Data	Freight Costs at the Curbside	Assessing NJ Transit's Mobile App for Users' Receptiveness	CIDNY Task 2 Develop a multi-agency/multi modal construction management tool	Task 6- Strategic ITS Deployment Plan for New York City	Transportation Infrastructure Robustness: Analysis and Measurement
CCNY Continued	Hunts Point Terminal Market: The Feasibility of Waterborne Transportation	Induced Emissions and Energy Use in Transportation: Use of Social Media Feeds as an IM Support Tool	An Agent-Based Disaster Response Inference Model for Assessment of Transportation Risk under Extreme Events	An Examination of Commercial Vehicle Access to Residential Buildings in New York City	Evaluating the Impacts of Real-Time Information on Subway Ridership in New York City	Potential Hydrodynamic Loads on Coastal Bridges in the Greater New York Area

CCNY Continued	Accommodating Freight in Complete Streets Guidebook	Potential Hydrodynamic Loads on Coastal Bridges in the Greater New York Area due to Extreme Storm Surge and Wave	Crowdsourcing: Evaluating its Impacts on Travel Behavior-	Activity-Based Approach for the Design of Sustainable Area and Cordon Pricing Schemes	Utilizing Digital Exhaust from Smartphone Applications for Transportation Planning,	NYC Connected Vehicle Deployment Project
	Online Learning Program for Staff of New York State's Metropolitan Planning Organizations					
The College of Staten Island	Regional Financing Options Study	Utilizing Digital Exhaust from Smartphone				
<u>Partner</u>	<u>Projects</u>					
Manhattan College	Characterization and Modeling of Photon Absorption in Asphalt Materials	Development of a New, Effective and Low-cost Media for Sustainable Management of Polluted Road Storm-water in Highly Urbanized Areas	A Probability-Based Approach for Assessment of Roadway Safety Hardware	Approach to Blast resistant Design of Aging Transportation Structures with Little or No Stand -Off Distance	The Spatial Effect of Socio-Economic Demographics on Transit Ridership: A	
NJIT	Hosting, maintenance and support for NYMTC PIMS	Feasibility of Lane Closures Using Probe Data	Smart Bus System under Connected Vehicles Environment	Improve Congestion Performance Measures via Conflating Private and Public		

Partner	Projects					
NYIT	Traffic Prediction using Wireless Cellular Networks	Secure and Private Sensing for Driver Authentication and Transportation Safety	Securing Inter-Vehicular Networks with Time and Driver Identity Considerations			
NYU (includes NYU/Poly)	Development of a new connected eco-driving system at signalized intersections with adaptive signal	Measuring Parking Intrusion in New York City Neighborhoods Using Parking Tickets	CIDNY Task 2 Develop a multi-agency/multi-modal construction management tool	CIDNY Task 5 - Develop a Comprehensive Guide to Signal Timing, New Detection and Advanced Signal	CIDNY Task 7 - Research on Pedestrians and Cyclists Safety Using ITS	
NYU (Continued)	CIDNY Task 8-Develop Data Storage and Access Platform for MTA BusTime Data	CIDNY Task 5- Develop a Comprehensive Guide to Signal Timing, New Detection and Advanced Signal	Public Transit and Mandatory Evacuations Prior to Extreme Weather Events in New York City	Portable and Integrated Multi-Sensor System for DataDriven Performance Evaluation of Urban Transportation Networks -CUSP		
RPI	Investigating Temporal Effects on Truck Accident Occurrence and Severity Level in NYC	Freight Costs at the Curbside	Analysis of Energy Efficient Highway Lighting Retrofits	Optimizing Work Zone Lighting	Developing A Macroscopic Decision Making Tool For Emergency Evacuation Planning	LED Roadway Lighting Benefits and Costs Collaboratio
RIT	Building a Sense of Place in an Information Era: Accessibility, Connectivity and Travel	The Effect of Optimization Strategy and Adoption Rate on V2X Technology Environmental Impact	The Socialization of Travel: The Effects of Traveler Social Networks on Resiliency in Traffic Networks			
Rowen	Impact of Polymer Modification on Mechanical and Viscoelastic Properties of Binders	Risk analysis of autonomous vehicles in mixed traffic streams				

SUNY:						
StonyBrook	CIDNY Task 6- Strategic ITS Deployment Plan for New York City	Induced Emissions and Energy Use in Transportation: Use of Social Media Feeds as an IM Support Tool	Self-heated Pavements	Computational Synthesis of High-Performance Non-Pneumatic Tires	Nano-modified geopolymers for concrete infrastructure rehabilitation	Mitigation of Transportation Induced Vibration using Seismic Metamaterial
	Urban Travel Time Variability: Spatio-Temporal Analysis for New York City					
Buffalo	CIDNY Task 5- Develop a Comprehensive Guide to Signal Timing, New Detection and Advanced Signal	Market Potential For Battery Electric Vehicles Based On Multi-Day Activity-Travel Patterns	Heterogeneous Regional Traffic Signal Control	Dynamic Bus Routing Problem for Evacuation,	Educating binational transportation networks, freight movements, and economic impacts	Managing the Daily Operations of a Bike Sharing System Using Mobile
Maritime	Hunts Point Terminal Market: The Feasibility of Waterborne Transportation	Spectral Based Controllability-preserving Pedestrian Evacuation Network Synthesis Using Multilayered Estimation Models in Real-time				
Albany	Innovative Travel Data Collection - Planning for the Next Two Decades	Technical Support for Use of National Performance Management Research Data Set	Techniques of Efficient Detection of Rapid Weather Changes and Analysis of their Impacts on a Highway Network			
Binghamton	Disaster Relief Vehicle Routing Under Uncertainty	Adaptive Evacuation Transportation Planning Under Uncertainty				
Partner	Projects					
New Paltz	Simulation of Automated Vehicles Drive Cycles					

Syracuse University	Innovative Techniques for Maintenance, Repair and Reconstruction (MRR) of Asphalt Roadways	A Workshop on Implementation of Asset Management Principles for Local Street Network	Investigation of Boundary Pressures and Internal Stresses in Geofam Blocks			
University of Puerto Rico	Developing generalized linear mixed models for the strategic highway safety planning process	Using Mobile Computers to Automate the Change Order Decision Making Process and Improve Total Time and Cost Predictions on Highway Construction Projects	Activity-Based Approach for the Design of Sustainable Area and Cordon Pricing Schemes			
The College of New Jersey	Worker Safety Issues of WIFI Devices	Improving Cross-Frame Design to Reduce the Effects of Skew in Steel I-Girder	Incorporating Probe Vehicle Data to Analyze Evacuation Route Resiliency			

Projects by Partner						
Partner	Projects					
Agencies:						
NYSDOT	Analysis of Energy Efficient Highway Lighting Retrofits	Technical Support for Use of National Performance Management Research	CIDNY Task 2 Develop a multi-agency/multi modal construction management tool			
NYSERDA	Hunts Point Terminal Market: The Feasibility of Waterborne Transportation	Induced Emissions and Energy Use in Transportation: Use of Social Media Feeds as an IM Support Tool	Eco-Driving Conference			
NYCDOT	Task 6- Strategic ITS Deployment Plan for New York City	CIDNY Task 5 - Develop a Comprehensive Guide to Signal Timing, New Detection and Advanced Signal	CIDNY Task 7 -Research on Pedestrians and Cyclists Safety Using ITS Technology in NYC	CIDNY Task 8- Develop Data Storage and Access Platform for MTA BusTime Data		

NJDOT	Assessing NJ Transit's Mobile App for Users' Receptiveness	Optimizing Work Zone Lighting	Worker Safety Issues of WIFI Devices			
NYMTC	Hosting, maintenance and support for NYMTC PIMS	Innovative Travel Data Collection - Planning for the Next Two Decades	PPS-AQ and PPS-CMP hosting, maintenance, backup and technical support	Regional Financing Options Study		

4. Impact

UTRC programs impact the transportation community in several ways. Through seminars, workshops, and conferences, information is disseminated and interdisciplinary discussions are fostered; which enable transportation professionals to gain knowledge and varying perspectives on issues. This, in turn, helps practitioners to implement policies that bring about efficient and effective solutions to meet local, regional, and national transportation needs. UTRC programs also have an impact on preparing the next generation of transportation professionals through internships and classroom-based instruction. Likewise, dissemination of research findings helps to foster collaboration between academic researchers and practitioners, which assists practitioners in implementing innovative solutions that meet their specific needs.

Impacts are expected from our new research projects as work continues.

5. Changes/problems

Nothing to report

6. Special reporting requirements

Nothing to report