




Program Progress Performance Report for University Transportation Centers Mineta Consortium for Transportation Mobility (MCTM) Led by San José State University

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- **Recipient Identifying Number or Account Number:** Not Applicable
- **Project/Grant Period:** November 30, 2016 – September 30, 2022
- **Reporting Period End Date:** May 30, 2017
- **Report Term or Frequency:** Semi-annual
- **Signature of Submitting Official:** 

■ 1. Accomplishments

Major Goals and Objectives of the Program

The Mineta Consortium for Transportation Mobility (MCTM), led by the Mineta Transportation Institute (MTI) at San José State University, conducts research, education, workforce development, and technology transfer activities to improve mobility of people and goods and make our nation's transportation system safe, efficient, accessible, and convenient for all.

MCTM unifies and focuses the efforts of four outstanding institutions that represent and support the geographical, cultural, racial, and socioeconomic diversity that makes our nation strong: Howard University; Navajo Technical University; San José State University; and the University of North Carolina Charlotte.

This Consortium was designed to foster synergies between leaders in transportation planning, policy, and engineering research, each with a long and distinguished track record of visualizing and deploying cutting-edge, multimodal solutions that meet our nation's mobility challenges.

MCTM plans to lead the nation in researching safe, reliable solutions that increase mobility of people and goods and strengthen the nation's economy. To achieve this goal, MCTM will:

- 1) leverage new technologies and innovative processes to achieve a seamless, multimodal surface transportation system that integrates with other "smart city" investments;
- 2) create a safer, more reliable, and more resilient surface transportation system that improves equity through increased access to jobs, housing, services, and other opportunities;
- 3) reduce the impact of transportation on climate change by identifying feasible alternative modes and fuels and innovative ways to reduce vehicle miles traveled;
- 4) increase access to surface transportation so that people of all abilities and socioeconomic levels enjoy the same opportunities for learning, living, labor, and leisure; and
- 5) optimize passenger and freight movements to improve mobility of people and goods through development of more accurate data models and advanced application of analytical tools.

It is not an overstatement to say that transportation of people and goods is the linchpin of our economy. Where human beings are concerned, the difference between having

and lacking mobility is no less than the difference between having and lacking opportunity. To that end, MCTM research and activities will use a multidisciplinary approach that addresses the complex nature of today's mobility challenges to advance the body of usable transportation knowledge.

Research Program

Emerging Leaders Seed Grant Program

The Emerging Leader Seed Grant Program seeks to engage and develop leadership capacity among junior faculty at San José State University. This program supports faculty in the first five years of an academic position who are interested in exploring transportation research problems aligned with MTI's research goals and objectives and encourages multidisciplinary participation.

To date, MTI has awarded three grants through this program:

1. Integrating Smart Cars in Smart Cities: A Particle Swarm Problem

Faculty Member: Francesca Favaro, PhD, Assistant Professor, Department of Aviation and Technology

This study explores an unconventional approach to solve the problem of safely integrating smart, autonomous vehicles (AVs) within smart cities. Specifically, this work explores the creation of ad-hoc rules for coordinating the motion of multiple AVs that mimic swarm and flock movement (or particle swarm motion). The goal is that of generalizing what systems like adaptive cruise control do currently. This work also explores the integration of the notion of hazard and danger levels (i.e., measures of the "closeness" to a given accident scenario, typically used in robotics) with the concept of safety distance for adaptive cruise control. Finally, the effect of short range V2V (vehicle to vehicle) and V2I (vehicle to infrastructure) communication on the proposed solutions will be explored.

2. Improving Demand Modeling in California's Rail Transit System

Faculty Member: Rui Liu, PhD, Assistant Professor, Department of Economics

This study explores a novel method to more accurately produce estimates of rail transit fare elasticity, a crucial input to cost-benefit analysis for rail transit systems. Using cached images of transit agency web pages, the analysis focuses on the precise date that fares changed and new stations opened for all rail transit systems in California since 2002 to generate fare elasticity estimates. In addition to time series modeling, panel data models will be developed and estimates compared.

3. A Comprehensive Picture of Smart Support Chain Management

Faculty Members: Seung Jun Lee, PhD, and Tianqin (Kelly) Shi, PhD, Assistant Professors, Department of Global Innovation and Leadership

This project explores the implications of smart supply chain management (SCM), focusing on logistics and transportation management, on the modern transportation system, and particularly its impacts on Silicon Valley. The research examines how smart supply chains and the modern transportation system interplay, and identifies which smart SCM issues are most impactful in Silicon Valley.

Request for Proposals Issued

MTI issued a competitive Request for Proposals (RFP) during this reporting period. This competitive, open, broad-based process for soliciting and selecting transportation research projects ensures that our research meets our stated Consortium goal to “lead the nation in research that identifies safe, reliable transportation solutions that increase mobility of people and goods and strengthen the nation’s economy.” Proposals are due July 31, 2017 and will be reviewed by the Research Associates Policy Oversight Committee (RAPOC). It is anticipated that proposals selected for funding will be under contract in early Fall.

Data Management Plan

MCTM’s final Data Management Plan (DMP) has been submitted for approval. After receiving comments on the draft DMP, the MCTM team worked closely with experts at San José State University including Dr. Gilles Muller, Associate Dean, Office of Research, Alena Filip, Human Protections Analyst, and Emily Chan, Scholarly Communications Librarian. The MCTM team collaborated extensively with Leighton Christensen from the National Transportation Library to ensure that the planned data repository complies with federal requirements.

Technology Transfer

MCTM utilizes a diverse array of dissemination methods and media to ensure research results, conference proceedings, and expert interviews reach those responsible for managing change. These methods include publication, seminars, workshops, websites, social media, webinars, and other technology transfer mechanisms. MCTM partners include university transportation centers, federal and state agencies, private industry, and nonprofits.

Consortium Website

In compliance with the *Grant Deliverables and Reporting Requirements for 2016 University Transportation Centers*, MCTM created a new website that features all consortium activities: <http://transweb.sjsu.edu/mctm/index.html>. This website is updated weekly with event information, media coverage, and research activities.

Media Coverage

Since inception, there have been 36 stories featured in print, radio, and television media outlets. Links to these articles are featured on the [Consortium website](#) and below is a snapshot of activity

- *Newport [RI] Daily News* (January 9, 2017): [Bike share program proposed for Newport](#)
- *USA Today* (February 14, 2017): [Sponsored signs coming to a highway near you? Not so fast.](#)
- *SmartRail World* (March 6, 2017): [The challenge of protecting transit and passenger rail: understanding how security works against terrorism](#)
- *UPI* (March 16, 2017): [Taking the 'terror' out of terrorism requires outsmarting fear](#)
- *Mass Transit* (March 16, 2017): [MTI Receives Community Partnership Recognition Award from VTA](#)
- *Washington Post- Bloomberg* (April 11, 2017): [Canadian Bus Company Flush With Contracts Is Now Takeover Target](#)
- *Newgeography.com* (April 12, 2017): [Urban leaders should plan for the public transit of the future](#)
- *Technology Today- EIN News* (April 28, 2017): [Crowd-sourced reporting provides transit agencies a valuable tool in protecting against terrorism](#)
- *Bridge Magazine* (May 11, 2017): [There's a lot riding on Detroit's new QLINE streetcar](#)
- *US News & World Report* (May 17, 2017): [Ghosts of Transit Past](#)

Regional Forums, National Summits, and K-12 Workforce Development Initiatives

During this period of performance, MCTM sponsored eight technology transfer activities that reached 514 attendees; these are:

RACES Seminar

January 11, 2017 • San Jose CA

MTI provided training for volunteers who are the backbone of the communications system for the City of San Jose's community emergency response training program. Amateur radio operators work with neighborhood groups to ensure their ability to transmit their damage assessment and injury information to the EOC expeditiously.

CALCOG Regional Leadership Forum

March 29-31, 2017 • Monterey CA

Every year, leaders from regions across California gather in Monterey for the Regional Leadership Forum. This event combines a focus on current issues with deeper level discussions about the role of regional governance in California. MCTM proudly co-sponsored this event which featured the results of MTI's research on [Exploring Bicycle and Public Transit Use by Low-Income Latino Immigrants: A Mixed-Methods Study in the San Francisco Bay Area](#) and [The Challenge of Protecting Transit and Passenger Rail: Understanding How Security Works Against Terrorism](#).

Women in Leadership League Conference – WILL2017

April 22, 2017 • San Jose CA

The inaugural Women in Leadership League Conference at San Jose State University brought together top women leaders, alumni, and students from all disciplines. The conference provided a mix of keynote addresses and small group discussions, providing participants with inspirational experiences as well as practical advice and strategies from successful women leaders. MCTM proudly co-sponsored this event.

Transportation and the Triple-Bottom Line

April 28, 2017 • San Jose CA

The Transportation and the Triple-Bottom Line conference explored the concept of 'sustainable transportation.' Panelists and speakers included an array of national experts, practitioners and scholars on social equity and transportation, the environmental impact

of transport, and financial mechanisms for secure and continuous transit systems, as well as, decision makers. MCTM proudly co-sponsored this event.

**STEM as a Path to the Future:
Partnering with the Booker T.
Washington Community Service
Center**

April 29, 2017 • San Jose CA

MCTM partnered with the Booker T. Washington Community Service Center to provide a tour of the Spartan Superway Automated Transportation Network Facility at San Jose State University.



Third Annual "Silicon Valley Bikes!" Festival & Bicycle Show

May 7, 2017 • San Jose, CA

Silicon Valley's bicycle enthusiasts and their families enjoyed an all-day celebration of cycling, family fun, community building, and an off-the-hook bicycle show by Gooseneck Bicycles. There were food trucks, events for kids, live music, and more. A collaboration between History San José, Silicon Valley Bicycle Coalition, Mineta Transportation Institute, Gooseneck Bicycles, Cycle California! Magazine and Santa Clara Valley Brewing made this event possible. The event took place at History Park San José.

**How can the Silicon Valley Become One of America's Great Biking Capitals?
Lessons Learned from the Dutch Cycling Embassy**

May 9, 2017 • San Jose CA

Worldwide the Netherlands has the highest bicycle use and provides the widest range of cycling know-how, products and infrastructure. With over 40 years of experience in bicycle policy and practical bicycle solutions, experts from the Dutch Cycling Embassy discussed bicycling in the context urban mobility, road safety and emission reductions, social inclusion, and health. The event was held at San Jose State University. MCTM proudly co-sponsored this bilateral exchange.

Green by Design Scientific Lab and Field Trip to the Tech Museum of Innovation

May 19, 2017 • San Jose CA

K-12 workforce development initiatives are crucial to the future of transportation and MCTM has partnered with third grade classroom teachers from Reed Elementary School so students can learn about sustainable transportation. In addition to participating in the Green by Design lab, students formed teams to build solar-powered vehicle models! MCTM sponsored this K-12 fieldtrip.

Student Internships and Assistantships

Currently, twenty students are receiving financial support from the Consortium. This support includes tuition, stipends, and paid hourly rates.

- Howard University: Seven students
- NTU: Five students
- SJSU: Five students
- UNCC: Three students

What Do You Plan to Do During the Next Reporting Period to Accomplish the Goals?

No change to the agency-approved application



2. Products

Publications, Conference Papers, and Presentations

Nothing to report

Journal publications

Nothing to report

Books or other non-periodical, one-time publications

Nothing to report

Website(s) or other Internet site(s)

- A MCTM web site was created at <http://transweb.sjsu.edu/mctm/index.html>
- An MCTM presence has been established, and continues to grow, in conjunction with the existing:
 - MTI Facebook page - www.facebook.com,
- Twitter feed - [@MinetaTrans](http://www.twitter.com)

Technologies or Techniques

Nothing to report

Inventions, Patent Applications, and/or Licenses:

Nothing to report

Other Products

Nothing to report

3. Participants & Collaborating Organizations

What Organizations Have Been Involved as Partners?

During the period of November 30, 2016 to May 30, 2017, MCTM universities partnered with the following organizations:

1. **Organization Name and Location:** American Public Transportation Association (APTA-Washington, DC)
 - Partner's Contribution to the Project:
 - Facilities: Conference room, audiovisual
 - Financial support: Provided breakfast and lunch
 - Project: MCTM Board of Trustees Winter Meeting
2. **Organization Name and Location:** Booker T. Washington Community Service Center (San Francisco, CA)
 - Partner's Contribution to the Project: Financial support (transportation for middle-school girls to tour Spartan Superway facility and San Jose State University campus)
 - Project: STEM as a Path to the Future
3. **Organization Name and Location:** California Department of Transportation (Caltrans-Sacramento, CA and several district offices)
 - Partner's Contribution to the Project: In-kind support (live-streaming broadcast network)
 - Project: MTI Masters of Science in Transportation Management
4. **Organization Name and Location:** Chinle, AZ High School (Chinle, AZ)
 - Partner's Contribution to the Project: In-kind support
 - Project: Developing a Certificate in Transportation Careers (MCTM Project 1703)

5. **Organization Name and Location:** City of Charlotte (Charlotte, NC)
 - Partner's Contribution to the Project: In-kind support (data pertaining to all major new developments and road construction projects in Charlotte)
 - Project: Modeling the Effect of Developments and Road Construction Projects on Transportation System Performance (MCTM Project 1702)
6. **Organization Name and Location:** District Department of Transportation (DDOT: Washington, DC)
 - Partner's Contribution to the Project: Financial support
 - Project: Exploring strategies to improve mobility and safety on roadway segments in Urban Area (MCTM Project 1701)
7. **Organization Name and Location:** Dutch Cycling Embassy (Delft, The Netherlands)
 - Partner's Contribution to the Project: In-kind support
 - Project: How Can the Silicon Valley Become One of American's Great Biking Capitals? Lessons Learned from the Dutch Cycling Embassy
8. **Organization Name and Location:** History San Jose (San Jose, CA)
 - Partner's Contribution to the Project: Financial support (free admission for Summer Transportation Institute high school students)
 - Project: Summer Transportation Institute
9. **Organization Name and Location:** Navajo Division of Transportation (Navajo DOT: Mentmore, NM)
 - Partner's Contribution to the Project: In-kind support
 - Project: Developing a Certificate in Transportation Careers (MCTM Project 1703)
10. **Organization Name and Location:** North Carolina Department of Transportation (NCDOT: Raleigh, NC)
 - Partner's Contribution to the Project: In-kind support (data pertaining to all road construction projects in and around Charlotte)
 - Project: Modeling the Effect of Developments and Road Construction Projects on Transportation System Performance (MCTM Project 1702)
11. **Organization Name and Location:** Prospect SV (San Jose, CA)
 - Partner's Contribution to the Project: Collaborative Research and Event
 - Project: Innovation & Impact 2017

12. **Organization Name and Location:** The Tech Museum (San Jose, CA)
- Partner's Contribution to the Project: Financial support (discounted admission for Summer Transportation Institute high school students)
 - Project: Summer Transportation Institute

Have Other Collaborators or Contacts Been Involved?

- Several organizations have participated as experts in MCTM summits, conferences and other events. These include but are not limited to the International Union of Railways; Metropolitan Transportation Commission, Santa Clara Valley Transportation Authority, and the Silicon Valley Leadership Group.

 **4. Impact**

What is the Impact on the Development of the Principal Disciplines of the Project?

Nothing to report

What is the Impact on Other Disciplines?

Nothing to report

What is the Impact on the Development of Transportation Workforce Development?

- MTI partnered with Reed Elementary school on the **Green by Design Scientific Lab and Field Trip to the Tech Museum of Innovation**. The third grade students participated in the Green by Design lab and then formed teams to build solar-powered vehicle models!
- MTI worked with middle-school girls from the Booker T. Washington Community Service Center to provide a tour of the San Jose State University campus and of the Spartan Superway Automated Transportation Network Facility. This one day field trip was called **STEM as a Path to the Future**.
- MTI is once again hosting the SJSU **Summer Transportation Institute** - a three-week, non-residential program that provides high-school students with a summer experience that is both academically challenging and fun. With an emphasis on science and related transportation issues, the curriculum introduces key components of scientific inquiry and major transportation-related topics of the day. Field trips to major Bay Area transportation sites and agencies provide a first-hand look at potential career paths. Recruitment is underway and the program will commence in June.

What is the Impact on Physical, Institutional, and Information Resources at the University or Other Partner Institutions?

The MCTM web site provides an online resource for professionals and the public to access a repository of transportation-related research.

What is the Impact on Technology Transfer?

- MCTM transfers the results of research and outreach activities through news releases, all of which include active links, and through media interviews, which are actively pitched. News releases are issued through Meltwater's national media distribution and are sent directly to MTI/MCTM's proprietary list of email addresses that include policy makers, transportation professionals, research associates, students and alumni, and others. This list is continually updated as new contacts are made. MTI also leverages diverse methods and media to disseminate research findings to those responsible for managing change. Such methods include research publication, seminars, workshops, websites, social media, and webinars, among others.

What is the Impact on Society Beyond Science and Technology?

The long-range purpose of MCTM research and outreach activities is to help legislators, policy leaders, transportation professionals, and others to understand the issues facing the nation's mobility infrastructure and to make optimum decisions based on factual data.

5. Changes/Problems

Changes in Approach and Reasons for Change: Nothing to report

Actual or Anticipated Problems or Delays Encountered: Nothing to report

Changes that Have a Significant Impact on Expenditures: Nothing to report

Change of Primary Performance Site Location from that Originally Proposed:
Nothing to report

ADDITIONAL INFORMATION REGARDING PRODUCTS AND IMPACTS

Outputs

- Website: MCTM created a website to document consortium-related activity (<http://transweb.sjsu.edu/mctm/events.html>)

- Technologies or Technology Assessments; Databases, Software or Models:
- Outreach activities: MNTRC sponsored eight outreach activities, two of which focused on K-12 during this period of performance.

Outcomes

Nothing to report

Impacts

Nothing to report