



Mobility Innovation Center 2025 Annual Report

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www.mic.comotion.uw.edu



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Your Innovation Partner

Partnerships in innovation



In many ways, the Mobility Innovation Center turned a corner in 2025, building on the partnerships and support developed over the years. As with any innovative endeavor, challenges are a part of the journey with failure always a very real potential outcome.

The MIC is in a much stronger position this year. During the 2025 legislative session, we received funding to continue our mission of conducting transportation-related research in partnership with the Washington State Department of Transportation, the private sector, and local transportation agencies. With this support, we have had an exceptional year that fulfills this commitment:

- Providing new insights into one of the most complex and critical pieces of infrastructure in the state, demonstrating how partnerships and technology can be most effective.
- Introducing a new approach to using transportation data with Challenge 2050 to understand our needs today and actions required for tomorrow to help ensure a high-quality of life and economic competitiveness. This work will continue to evolve to serve both the public and decision-makers on our state's transportation needs.
- Strengthening public-private-academic partnerships with the launch of the Seattle Climate Innovation Hub, which supports entrepreneurs, fosters a growing green economy, and helps bring people back to downtown.
- Highlighting shifts in work and life-trips in the city of Seattle through our best-in-class report updated and released in 2025 with Commute Seattle and the city of Seattle.
- Supporting clean transportation at the Port of Seattle by leveraging research that can help taxis and ride-hailing drivers transition to zero-emissions vehicles.
- Evaluating the effectiveness of artificial-intelligence-powered technology at at-grade rail crossings.

This region has the potential to be a national leader in the future of mobility through continued collaborative, cross-sector partnerships. We've shown what's possible and we're ready to go even further in the year ahead.



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Barton G. Treece, III, PTP

Director

Mobility Innovation Center at the University of Washington

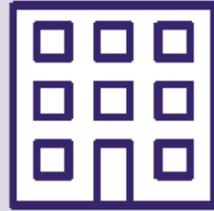
Mobility Innovation Center since 2016

BY THE NUMBERS



202

Collaborators



21

UW departments



38

Projects launched

The Mobility Innovation Center brings together the knowledge, talents, and expertise of the University of Washington with partners from private and public sectors to solve real-world challenges facing our transportation system.

UW and Challenge Seattle teamed up in 2016 to establish a multidisciplinary research center that is committed to advancing our region's economy and quality of life by helping to build the transportation system of the future. Within this "center for social good" model, UW researchers collaborate directly with industry partners to scope implementation-ready projects.



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Seattle Climate Innovation Hub

Launched in January 2025



The [Seattle Climate Innovation Hub](#) launched as a collaborative platform to accelerate climate solutions through research, technology, and public-private partnerships. Developed with key support from the Mobility Innovation Center, the Hub is designed to foster innovation in areas such as clean energy, e-mobility, and sustainable urban development. It brings together academic institutions, industry leaders, and community stakeholders to address the region's most pressing climate challenges. As part of this effort, the [CoMotion Labs Climate Tech Incubator Demo Day](#) showcased groundbreaking projects from local innovators, highlighting practical applications of climate technology and strategies for scaling impact. The event was hosted by Bart Treece, Director of the Mobility Innovation Center, underscoring the Center's leadership in advancing climate-focused mobility solutions and building a resilient, low-carbon future for the Pacific Northwest. Looking ahead, a new Climate Cohort will launch in early 2026, continuing the momentum and expanding opportunities for collaboration and innovation.

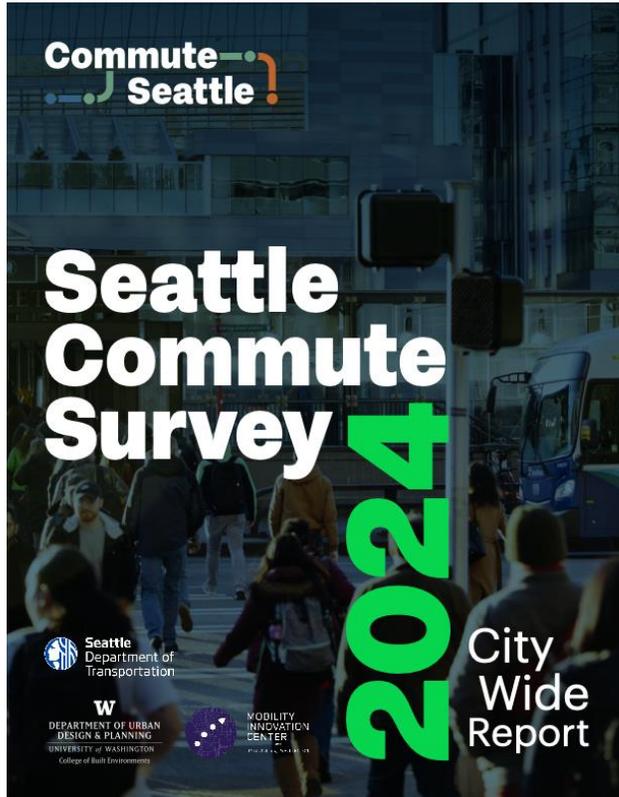


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More info: comotion.uw.edu/startups-incubation/comotion-labs/seattle-climate-innovation-hub/

Seattle Commute Study 2024 and changing travel patterns



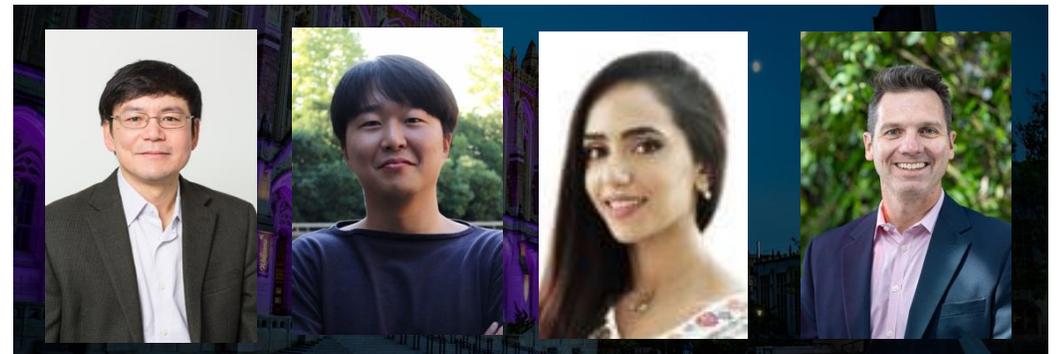
The 2024 Seattle Commute Study was shaped by a powerful coalition: Commute Seattle, the Seattle Department of Transportation, and the University of Washington's Mobility Innovation Center—with academic leadership from UW's Department of Urban Design and Planning. Co-authors include Professor Qing Shen, PhD Candidate Hoseok Sa, Dr. Lamis Ashour, and MIC Director Bart Treece, along with Kurt Winner and Tara Peters from Commute Seattle. The survey reached over 75,000 respondents in fall 2024—encompassing large and small employers, college students, and underserved populations—to offer a comprehensive, equitable snapshot of trip-making behaviors.

Key Takeaways

- **Remote work decline:** Fully remote workers dropped 8 percentage points vs. 2022
- **Drive-alone increase:** First rise in a decade, up 6 points
- **Transit rebound:** Downtown commuters saw a 3-point increase in transit use
- **Active mode satisfaction:** Bike commuters were the most likely to recommend their mode of travel
- **Non-commute driving down:** Fewer people took solo car trips for errands and leisure
- **Top mode-choice factors:** Travel time, convenience, reliability, and cost



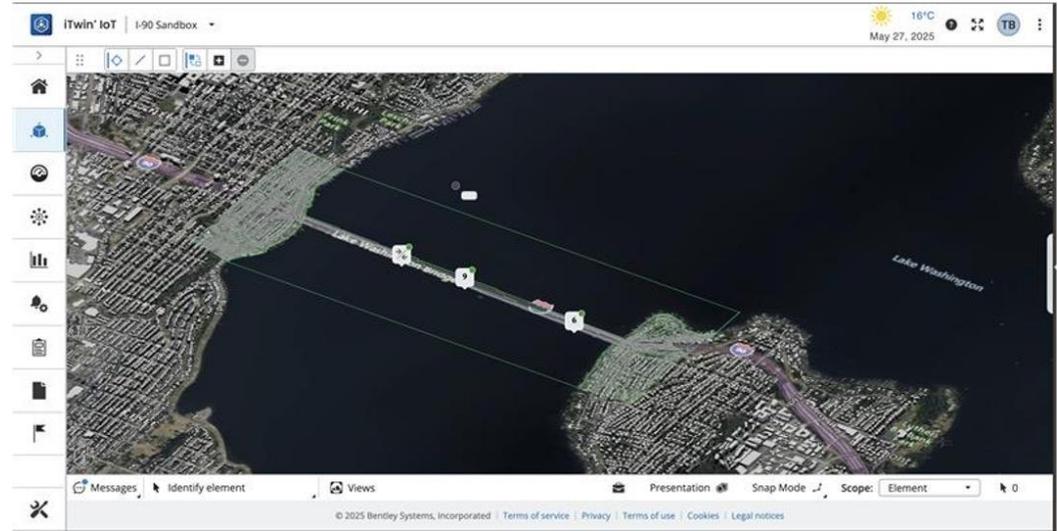
W DEPARTMENT OF URBAN DESIGN & PLANNING
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College of Built Environments



Key highlights and full report: mic.comotion.uw.edu/announcement/can-you-find-happiness-in-a-commute-findings-and-trends-from-the-2024-seattle-commute-survey/

Groundbreaking milestone: I-90 Digital Twin

In 2025, the I-90 Digital Twin project achieved major milestones, transforming how we monitor and manage one of the region's most critical corridors. The team successfully integrated environmental and infrastructure data into a dynamic simulation platform, enabling greater insight for a complex structure that will soon include light rail. Several sensors are now installed and transmitting data via T-Mobile's secured 5G network into Microsoft Azure's IoT hub for visualization in the Bentley Systems iTwin platform. WSDOT maintenance crews are using the platform as a "virtual inspector" on the bridge. The UW team is working with Sound Transit to leverage the technology and understand additional use cases for a second phase of this project in 2026.

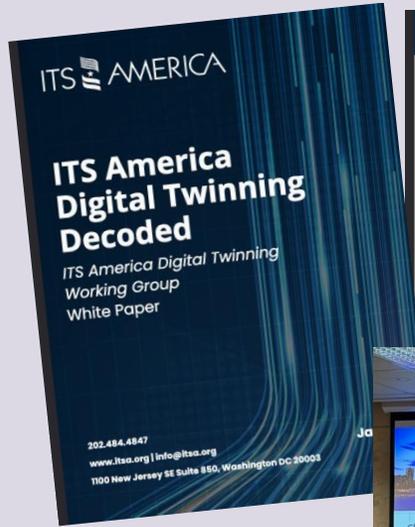


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Project information: mic.comotion.uw.edu/announcement/what-it-takes-to-build-a-digital-twin-of-one-of-the-longest-floating-bridges-in-the-world-that-will-soon-also-run-trains/

The leading edge of digital twin technology



CIB World Building Congress: “Challenges in Developing Digital Twin Systems: Insights from a Case Study”

Ori Borjigin, PhD student and UW Digital Twin team member

The I-90 Digital Twin continues to gain attention locally and nationally for the ambitious effort that is providing real value and insights for critical and complex infrastructure.



“Managing Complex Structures with Digital Twins”

From left: Jim Mahugh WSDOT, Bart Treece Mobility Innovation Center, Carrie Sturts Dossick UW College of Built Environments, Vidhu Shekar Microsoft



City of Bellevue Innovation Exchange

From left: Vince Horn WSDOT, Bart Treece, Mobility Innovation Center



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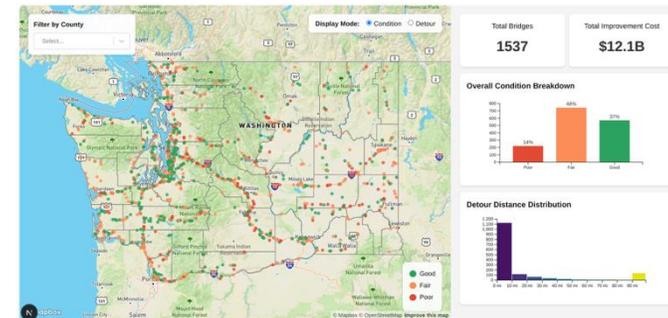
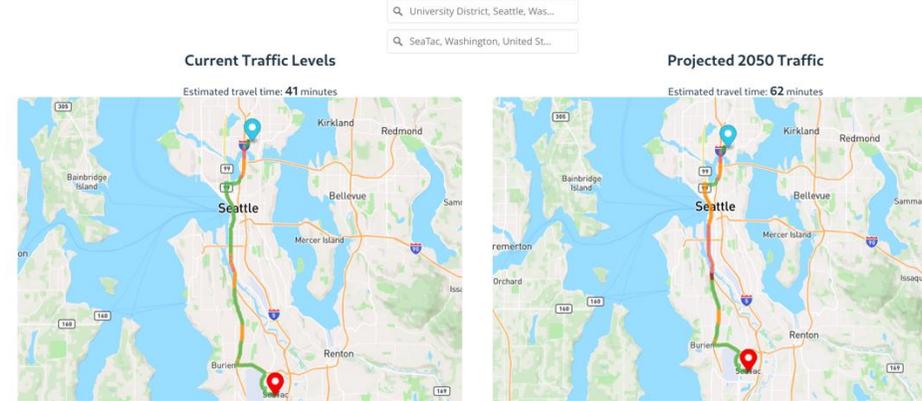
Project information: mic.comotion.uw.edu/announcement/what-it-takes-to-build-a-digital-twin-of-one-of-the-longest-floating-bridges-in-the-world-that-will-soon-also-run-trains/

Challenge 2050: The future in motion

The 2050 Transportation Visualization project, with a public-facing title “Challenge 2050: The Future in Motion,” is a data visualization and public engagement project developed by the University of Washington’s Mobility Innovation Center to address Washington State’s growing transportation challenges. With the state’s population and freight demand projected to rise sharply by 2050, the project aims to make complex transportation data accessible and actionable for the public and policymakers.

The project team led by Professor Cecilia Aragon from Human Centered Design and Engineering, made planning-level data easier to access and understand. Data sets includes future population growth projections, travel times and freight forecasts, and current bridge conditions and potential detour lengths. This first phase is complete and will be released publicly by Jan. 2026, with additional updates and iterations planned.

This first phase of work was sponsored by the Washington State Department of Transportation, King County, Alaska Airlines, Boeing, and Microsoft. Challenge Seattle and Microsoft are supporting next phase development. UW team members include Ryan Avery from the Washington State Transportation Center (TRAC), HCDE PhD Candidate Andrea Figueroa, Mobility Innovation Center Director Bart Treece, PhD students Vishnupriya Napa Ravikumar, and Susanna Lammervo.

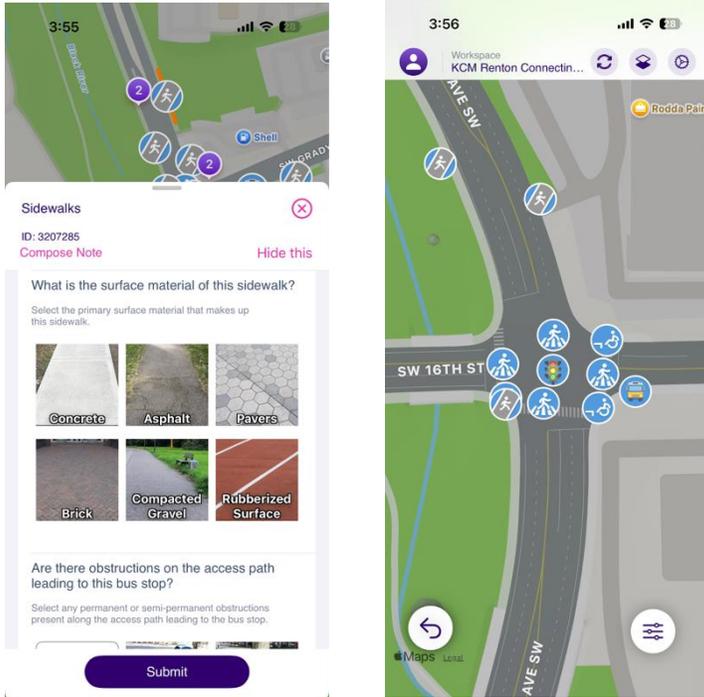


Project information: mic.comotion.uw.edu/projects/transportation-2050-visualization-scenarios/

Walk audit mobile app

AVIV ScoutRoute

Accessibility, Validation, Improved Verification



Data collection is made easier, simple and customizable. King County pathway reviewers or bus riders can record sidewalk conditions, bus stop features, or crossing safety directly in the field, with photos and geo-tagged notes linked to the network map.

In 2025, the Taskar Center for Accessible Technology partnered with King County Metro to unify and modernize pedestrian access data collection across multiple teams, reducing silos and enabling shared stewardship. They enhanced the Quests Collection Mobile App, allowing staff to gather real-world infrastructure data with features like photo uploads and comments. This community-driven approach captures detailed insights, including from people with disabilities, helping King County identify barriers and improve pedestrian safety and accessibility for all residents.

The Mobile Audit App

At the heart of this effort is a new Quest-based mobile audit app. It's not just a tool, it's a platform that makes collaboration practical, scalable, and sustainable. Designed with input from all seven teams, the app empowers staff to:

- Capture **real-world conditions** through photos, comments, and geo-tagged observations.
- Vet and review data within their own team workspaces, while maintaining transparency across departments.
- Manage accessibility insights in one unified system, reducing duplication and conflict.
- Generate customizable Quest forms, so each team can tailor data collection to its specific needs without technical hurdles.



This project is funded by King County Metro and led by Dr. Anat Caspi, director of the Taskar Center for Accessible Technology and principal scientist at the Paul G. Allen School of Computer Science & Engineering.



Project information: mic.comotion.uw.edu/projects/health-through-housing-pedestrian-accessibility-mapping-project/

Shore Power: Bremerton Ferry Terminal eMobility



How do you increase walk-on uses for the ferry system using electrified mobility? That's what Shore Power is intended to find out. Launched this summer by the University of Washington Mobility Innovation Center, this collaborative research, sponsored by WSDOT, is working with Kitsap Transit, the City of Bremerton, and utility providers to address low walk-on ridership (just 10.7%) at the Bremerton ferry terminal. It aims to develop a replicable, interagency planning framework that integrates electrified mobility options—such as EV charging, zero-emission buses, e-bikes, and scooters—to enhance accessibility, reduce emissions, and promote sustainable transportation. Through community workshops, spatial infrastructure design, energy modeling, and cost analysis, outcomes will include a full-scale planning toolkit and stakeholder workshop designed to scale these electrified mobility hubs across the Washington State Ferry system and potentially beyond.



UW project team

From left: Bart Treece, Rachel Berney, Hyun Woo “Chris” Lee, Lingzi Wu, Nadeem Akhtar

- **Electrified Mobility Hub:** Integrates EV charging, zero-emission buses, e-bikes, and scooters
- **Collaborative Partnership:** Involves UW + WSDOT + Kitsap Transit + City of Bremerton + utilities
- **Grow Walk-On Ridership:** Increase ferry access for a growing population
- **Sustainability:** Reduces vehicle emissions through eMobility use
- **Planning Toolkit:** Offers Spatial design, energy modeling, cost analysis for scalable solutions
- **Future Impact:** Provides a replicable framework across Washington State Ferry system and beyond



COLLEGE OF BUILT ENVIRONMENTS

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Project information: mic.comotion.uw.edu/projects/shore-power-bremerton-ferry-terminal-emobility-project/

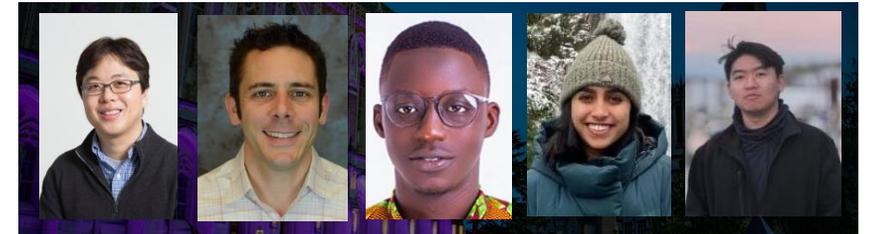
Port of Seattle – Taxi and TNC Sustainability



Passenger ground transportation to and from Seattle-Tacoma International Airport (SEA) and Port of Seattle maritime terminals remains a significant source of greenhouse gas emissions. While progress has been made in reducing emissions from taxis and transportation network companies (TNCs), challenges such as high vehicle costs, limited access to fast and affordable charging, and regulatory complexities continue to slow the transition to electric vehicles. To address these barriers, the Port of Seattle partnered with the Mobility Innovation Center to develop equitable policy guidance and infrastructure recommendations that accelerate electrification for taxi and TNC fleets. This effort supports the Port's Century Agenda goals of cutting Scope 3 emissions by 50% by 2030 and achieving carbon neutrality by 2050.

The project combines direct engagement with drivers and advanced modeling to identify the most effective strategies for electrification. It evaluates incentive programs, recommends optimal charging locations, and collaborates with utilities to ensure power availability. If implemented, these strategies could reduce nearly 30,000 metric tons of carbon emissions annually—over 10% of SEA's total emissions from passenger ground transportation—while promoting equitable business opportunities and maintaining efficient access to airport facilities.

Professor Hyun Woo "Chris" Lee from Construction Management, and Professor Don MacKenzie from Civil & Environmental Engineering are each leading a portion of this two-phase project with graduate researchers Alidu Abdul-Razak, Rubina Singh, and Zeyu Wang. This work will be complete by summer 2026.



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Project information: mic.comotion.uw.edu/projects/taxi-and-transportation-network-company-ttnc-electrification-policy-guidance/

Rainier Valley SMART evaluation



Can artificial intelligence-powered video detection systems improve safety for all users at light rail crossings in Seattle's Rainier Valley? That's what this pilot project, led by Sound Transit and the city of Seattle, intends to find out. UW professor Xuegang (Jeff) Ban and research assistant Soheil Keshavarz from the department of Civil & Environmental Engineering will lead the data collection and analysis to determine if the technology achieves the project goals for a potential second phase. MIC Director Bart Treece is also contributing to the project.

Funding from this project is from USDOT, through Sound Transit and in partnership with the city of Seattle, with Derq as the equipment vendor.



Project information: sdotblog.seattle.gov/2023/03/24/two-new-federal-smart-grants/

Unified Control Center (UCC)



As Sound Transit continues to expand, so does the complexity of managing a larger and more integrated regional system. In 2025, the research team from the University of Washington's Center on Collaborative Systems for Safety, Security, and Resilience (CoSSaR) completed the first phase of the Unified Control Center initiative, which evaluated current operational workflows to identify opportunities to improve system efficiency. Through interviews with agency personnel across multiple functions, the team assessed existing roles, responsibilities, and challenges, as well as the capabilities needed to support Sound Transit's growing operational demands.

This initial phase produced recommendations for integrating data from various operational systems to enhance situational awareness and streamline decision-making. Building on these findings, the next phase of the project focuses on co-developing a unified system that strengthens agency coordination through digital tools and shared, real-time information, enabling faster and more effective responses to system needs.



The project team includes Dr. Sonia Savelli, Professor Mark Haselkorn, and researchers Susanna Lammervo, Bhoomika Bangalore Rajeeva, Ridley Jones LeDoux, and Brie Yost.



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Project information:

mic.comotion.uw.edu/projects/unified-control-center-innovation-project/

Intelligent Vehicles and Road Infrastructure Workshop



Transportation is rapidly transforming as connected and automated vehicles (CAVs) move toward deployment and roadway infrastructure incorporates sensors and edge computing to potentially improve travel. This summer, Mobility Innovation Center director Bart Treece participated in a two-day workshop, supported by the German Research Foundation (Deutsche Forschungsgemeinschaft “DFG”) to explore CAV-infrastructure cooperation, cybersecurity, and AI applications through presentations and panels. Researchers from academia and industry shared cutting-edge methods, and participants engaged funding agencies to tackle challenges and accelerate real-world CAV deployment.

The workshop was organized by Professor Anne Stockem Novo in Germany and Professor Xuegang (Jeff) Ban from the University of Washington department of Civil and Environmental Engineering.

Contributors included representatives from US DOT, ZF Automotive Germany GmbH, Volkswagen, Schotte Automotive, INGgreen, University Duisburg-Essen, TU Dortmund, University of Washington, Ruhr West University of Applied Sciences.



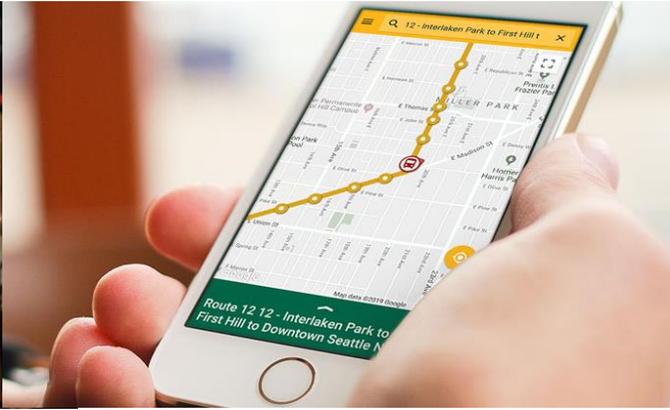
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Funded by
DFG Deutsche
Forschungsgemeinschaft
German Research Foundation



Workshop information : https://informatik.hs-ruhrwest.de/wp-content/uploads/2025/03/Flyer_Workshop.pdf

New initiatives in 2026



Transit meta analysis

MIC is helping transform fragmented data into actionable insights, ensuring transit agencies stay agile and responsive in a rapidly evolving mobility landscape. This project will be led by Professor Cynthia Chen from Civil and Environmental Engineering with Professor Qing Shen from Urban Design and Planning. Launching this spring, it will help King County Metro make sense of multiple data streams, such as commute surveys, rider feedback, and ORCA insights, to keep pace with changing travel patterns. Instead of just crunching numbers, we're creating a roadmap for data-driven service improvements that boost rider experience and optimize resources.

Cashless fare policy

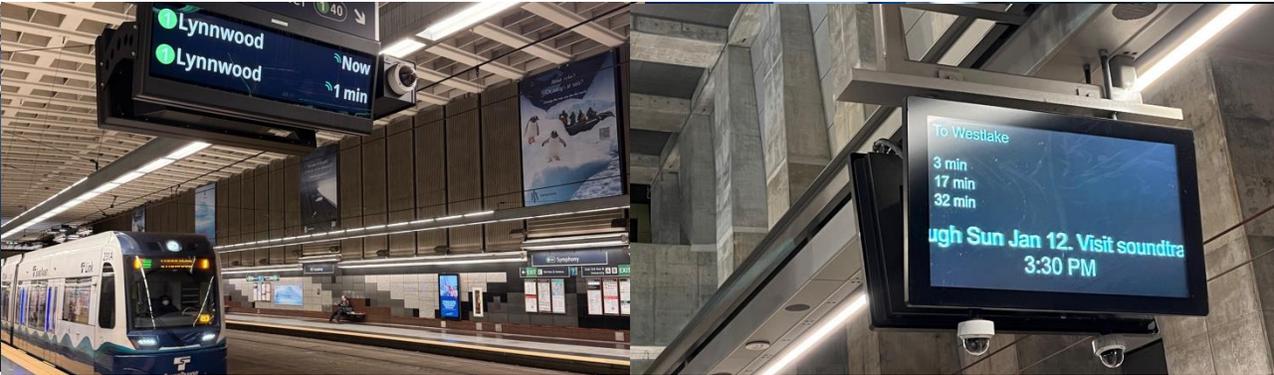
Like many transit agencies, King County Metro is preparing to transition to a cashless onboard fare payment system. This modernization effort is aimed at improving operational efficiency while ensuring that the agency's most transit-dependent riders, including "unbanked" and "underbanked" community members, are not left behind. This project seeks to identify barriers that riders may face in a cashless environment and develop equitable, practical solutions that support full participation in the system.

To advance this work, the Mobility Innovation Center, in partnership with the UW Evans Policy Innovation Collaborative (EPIC), is developing an evaluation that leverages expertise from the financial services industry. The findings will inform recommendations, outreach and marketing strategies, and potential pilot concepts to help transit agencies implement a fair and inclusive transition to cashless fare collection.



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New initiatives in 2026



Using AI to help with train arrival info

Although transit agencies do their best to maintain a consistent and reliable schedule, occasionally an incident will delay trains and can cause issues with the arrival screens at the stations. Working with Sound Transit, the Mobility Innovation Center is investigating whether artificial intelligence can be used to provide accurate information to passengers if there is disruption in the system. This work is being led by Professor Xuegang (Jeff) Ban from the department of Civil and Environmental Engineering and research assistant Zepu Wang. Findings from this initial investigation may lead to a larger-scale effort.

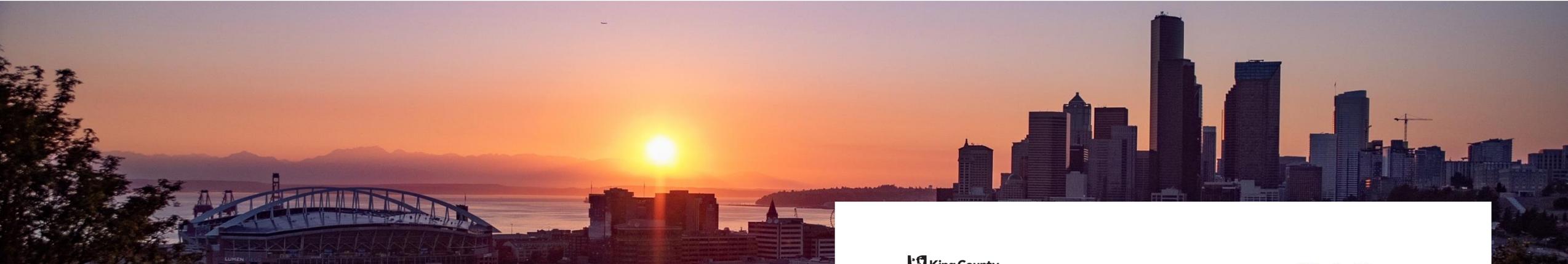
Evaluating autonomous vehicle technology

With the emergence of connected and autonomous vehicles, cities are trying to find the best ways to work with the industry with goals of safety and efficiency for all users of the road. In partnership with the Washington D.C. Department of Transportation (DDOT) and the Southwest Business Improvement District (SWBID), the Mobility Innovation Center will help test the feasibility of autonomous vehicle monitoring technologies and approaches at select locations and will develop a deployment plan for the full testbed. The research and evaluation team includes professor Samer Hamdar from George Washington University, Xuegang (Jeff) Ban from the University of Washington department of Civil & Environmental Engineering, and MIC Director Bart Treece. This initial phase was rescheduled and will begin in the spring of 2026.



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A shared vision

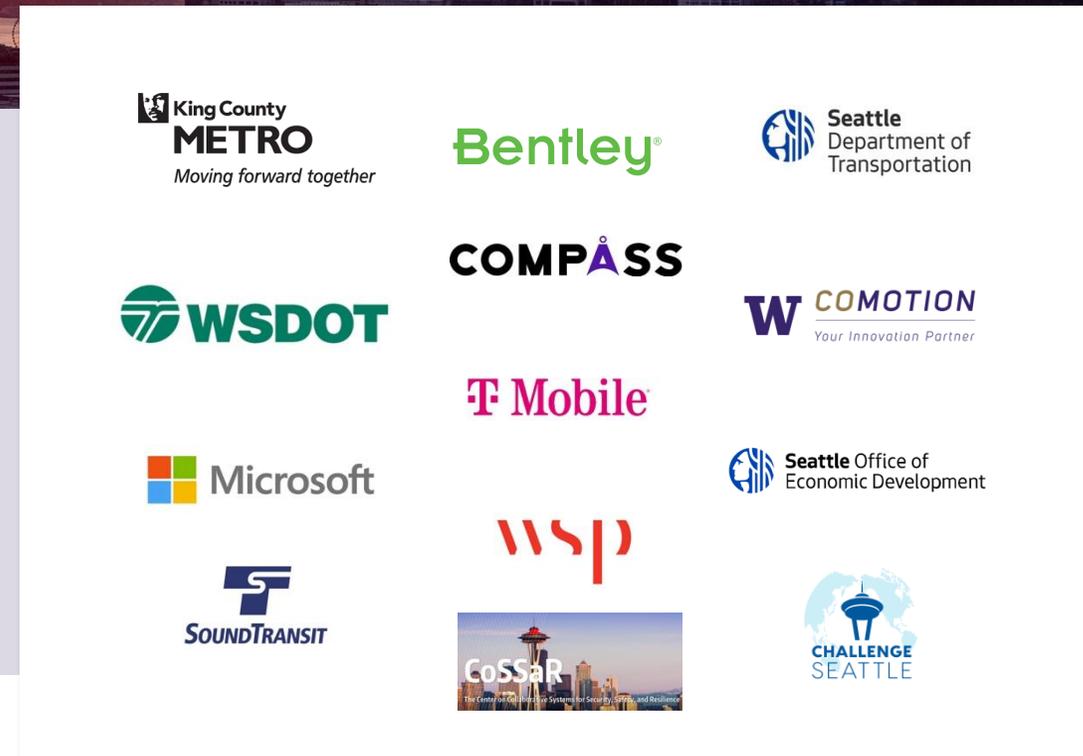


To ensure a robust economy and quality of life for the region, Seattle needs an integrated transportation system that is reliable, safe, environmentally sustainable, forward-facing, equitable, and accessible.

The Mobility Innovation Center brings together the knowledge, talents, and expertise of the University of Washington and private and public sector partners to solve real-world challenges facing our transportation system.

To accomplish our vision, everyone must be part of the solution.

The Center is truly grateful for the support of our partners. We look forward to continuing our progress into the new year and beyond!



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