As population, congestion, and freight transportation continue to increase, our nation will require more and more qualified workers to meet its transportation needs. At the same time, the Transportation Research Board estimates that 50 percent of the state transportation workforce will be eligible to retire in the next 10 years. In addition to the pool of qualified workers decreasing, the existing workforce will require ongoing training to keep abreast of rapidly changing transportation technologies. Because of these major challenges, the FHWA claims that developing “a skilled, technically competent workforce is the single most effective effort the transportation community can make.”

As a Regional University Transportation Center, NEXTRANS aims to be a leader in attracting and preparing students to be part of a highly-skilled workforce. Already, the Center has partnered with Martin University to help diversify the transportation profession by attracting non-traditional students. It has also helped sponsor The Ohio State University’s Smart Campus Transit Laboratory, which is currently in development. This lab will provide data and technological resources that can be integrated into both research and educational projects, with an eye towards not only challenging engineers, but also involving and interesting humanities students in transportation’s real-world applications. In addition, NEXTRANS will be inviting applications for its summer internship program, which will competitively select undergraduate students for a two-month program of transportation research and activities at Purdue University, the University of Illinois at Urbana-Champaign, and The Ohio State University.

Students, however, are not the only pool of future leaders in the industry. In order to enhance the skills of those already in the field, NEXTRANS has joined with other Regional UTCs to participate in the Transportation Leadership Graduate Certificate (TLGC) Program. This distance-learning program is geared towards early-to-mid-career transportation professionals with technical, operations and planning experience in the public or private sector. The program’s objective is to nurture those with potential leadership qualities to advance from technical responsibilities to management and leadership roles by completing interdisciplinary course without leaving their current professions.

Continued on Page 2
The NEXTRANS Center has reached a number of milestones since Issue 1 of the Center’s newsletter appeared in Summer 2008. We are close to selecting our second round of research projects, have hired two new full-time staff members, and have celebrated the accomplishments of our first year in operation with the publication of our 2008 Annual Report. Once again, I would like to thank the Center’s students, faculty and staff, as well our partners from government, academia, and the private sector for enabling our progress.

As a nation, we are currently facing significant economic challenges. Because there are strong linkages between transportation and economic rejuvenation, our new President has already outlined a plan to create millions of jobs in the U.S. by ”making the single largest new investment in our national infrastructure since the creation of the federal highway system in the 1950s.” However, the construction of this new infrastructure is only part of the process. To ensure the long-term success of this investment, the academic, public, and private sectors must develop and nurture a highly skilled workforce that will sustain our transportation system for decades to come. It is for this reason, among others, that we have chosen to make the theme of this newsletter workforce development.

As you will see throughout this issue, the NEXTRANS Center strives to nurture the current and future transportation workforce through internships, workshops, community and educational projects, distance learning certificates, and by bringing together faculty and professionals dedicated to these goals. In addition, this newsletter demonstrates the Center’s ongoing commitment to cutting-edge research and outreach activities.

We are always looking for future initiatives, and welcome your involvement in NEXTRANS sponsored programs. For more information about our Center, please visit our web site www.purdue.edu/dp/nextrans.

How Will the Transportation Industry Meet the Workforce Challenges Ahead?

Continued from Page 1

As you will see throughout this issue, the NEXTRANS Center’s workforce development goals are further advanced by providing students with experiential learning opportunities such as workshops, as well as its active participation in a number of recent conferences and summits. These workshop development efforts include:

- A PPP workshop that gave approximately forty students the opportunity to participate in a Private Toll Road Concession Practical Case Study (Page 5).
- Director Srinivas Peeta’s participation in a workforce panel at the Indiana Logistics Summit (Page 6).
- Two workforce panels geared towards students at this year’s Ohio Transportation and Engineering Conference. Organized by faculty members from The Ohio State University, these panels were attended by over a hundred students (Page 7).

In addition to these events, Managing Director Mahmud Farooque recently attended the 21st Century Transportation Workforce Summit. Held in Madison, Wisconsin on December 8-9, 2008, this event aimed to identify ways for all sectors to help meet the transportation workforce challenges ahead.
Average Annual Daily Traffic (AADT) is one of the most fundamental measures of traffic flow. Because of its importance to planning, design, and trend analysis, state DOTs and transportation agencies around the world commit important resources to collecting the data used to estimate AADT. Currently, AADT estimates are largely produced from data collected by in-highway traffic counters operated by traffic monitoring crews. In addition to disrupting traffic and placing crews in danger, this system is costly, causing states with limited resources and large highway infrastructure to collect data on a multi-year cycle.

In response, NEXTRANS investigators Professor Mark McCord and Professor Prem Goel at The Ohio State University have developed an alternative method that combines older, ground-based traffic data with traffic information contained in recent air photos. Since state DOTs and engineering offices collect thousands of air photos for mapping and inventory, there is potentially a massive amount of data available that could be exploited at minimal cost. This project aims to build on previous work by putting this approach to direct use in Ohio. This will confirm the system’s accuracy, evaluate its performance, and help develop an efficient way to use it on a widespread basis.

So far, researchers have developed software to digitize roadway, trucks, and car coordinates in digital images in order to compute “image-based” average annual daily traffic (AADT). They have also begun writing software to compute necessary summary information from databases collected by state DOT traffic monitoring crews and integrate these values with image-based AADT estimates to calculate “combined ground-and-image-based” AADT. In addition, researchers are coordinating with heads of traffic monitoring, aerial engineering, and GIS at the Ohio Department of Transportation (ODOT) to develop a means of integrating this methodology in an ODOT environment for prototype testing.

By leveraging existing technology to improve the efficiency of traffic monitoring, this project supports the NEXTRANS Center’s theme of integrated and innovative solutions. This more efficient method of obtaining AADT will aid in planning highway infrastructure maintenance and renewal, as well as help analyze performance of highway-vehicle interaction. Producing more accurate AADT estimates from existing data will also mean fewer expensive, dangerous, and disruptive ground-based traffic counts, allowing agencies to increase mobility and safety while decreasing cost.

INTERESTED IN READING MORE ABOUT THE NEXTRANS CENTER’S CURRENT RESEARCH PROJECTS?


TO REQUEST A HARD COPY, EMAIL jmehr@purdue.edu
Erol Tutumluer is currently a Professor of Civil and Environmental Engineering (CEE) at the University of Illinois at Urbana-Champaign (UIUC), where he has been teaching graduate and undergraduate courses since 1996. He holds a B.S. (Bogazici University 1989), 2 M.S. degrees (Duke University 1991 and Georgia Tech 1993), and a Ph.D. (Georgia Tech 1995), all in Civil Engineering.

Professor Tutumluer’s area of expertise is in testing and modeling of pavement and railroad track geo-materials, areas in which he has authored and co-authored over 130 technical papers. He is currently working on a NEXTRANS project titled “Nondestructive Pavement Evaluation Using Finite Element Analysis Based Soft Computing Models.” This research has led to the development of an innovative methodology called SOFTSYS (Soft Computing Based Pavement & Geomaterial System Analyzer) that utilizes artificial neural networks (ANNs) and genetic algorithms (GAs) to calculate pavement properties and layer thicknesses without the need for destructive methods such as pavement coring. According to Tutumluer, “the major outcome with the future use of the innovative SOFTSYS methodology will be realized in the area of improved asset management in transportation infrastructure.”

Tutumluer has received numerous awards for his teaching and research, including the Transportation Research Board’s Fred Burgraff Award for Excellence in Transportation Research (2000), and the TRB’s Geology and Properties of Earth Materials Section Best Paper Award. This award for his paper titled, “Use of Falling Weight Deflectometer Testing to Determine Relative Damage in Asphalt Pavement Unbound Aggregate Layers,” was presented during the TRB 88th Annual Meeting in January 2009.

Dr. Tutumluer currently chairs committees for TRB and the American Society of Civil Engineering (ASCE), in addition to serving on many others. He is an Editorial Board Member of the International Journal of Pavement Engineering, and an Associate Editor of both the International Journal of Pavement Research and Technology and the ASCE Journal of Computing in Civil Engineering.

Regarding his work with the NEXTRANS Center, Dr. Tutumluer states: “I believe the innovation emphasized in the NEXTRANS Center’s mission statement is key to identifying properly the latest technological advances through research and then applying them in our NEXTRANS projects to demonstrate improvement in transportation efficiency.”

Post Doctoral Research Associate, NEXTRANS Center
(Position announced January 5, 2009)

The NEXTRANS Center invites applications for the position of a Post Doctoral Research Associate, to be filled immediately. The individual in this position will conduct center-associated research and outreach activities, and will identify and pursue new funding opportunities for the Center. The individual will participate in the writing of research proposals and research reports.

Qualifications:
- Ph.D. in engineering or related field.
- Strong technical (disciplinary) research expertise in transportation is required.
- Must have good written and oral communications skills including comfort with speaking to diverse audiences.
- Excellent interpersonal and strong time management and organizational skills necessary.
- Excellent analytical skills.

For complete job description and application information, please visit http://www.purdue.edu/dp/nextrans/about_jobs.php
PPP Workshop Bridges the Gap Between Classroom and Real World

On December 2, 2008, the NEXTRANS Center hosted a workshop that allowed students to analyze a toll road project from the perspective of private-sector investors. The workshop, titled “XYZ Express Toll Route: A PPP (Private Toll Road Concession) Practical Case Study,” was presented by Fidel Saenz de Ormijana and Ricardo Sanchez of Ferrovial Group. It was attended by approximately forty Purdue students and faculty members, in addition to other representatives of Ferrovial Group.

For the exercise, Saenz and Sanchez asked students to examine a hypothetical toll road project called the XYZ Express Toll Route, which the state DOT is planning to develop as an alternative route to a congested freeway. The project is to be completed through a standard public-private partnership (PPP), in which a private company (concessionaire) will design, build, finance, and operate the road, recovering their investment via tolls. Student participants were then called in as “experts” by potential private-sector investors, in order to analyze the financial feasibility of the project.

After being presented with a case study and data spreadsheet in advance, attendees created a concession financial model that weighed revenue against operation, maintenance, and capital costs.

- First, revenue calculations were made based on the Annual Average Daily Traffic (AADT) that would be diverted to the new road. This was estimated based on toll rates, travel times, user willingness to pay a toll, and perceived driver benefits.

- In order to determine the NET revenue, students then incorporated initial capital cost and investment into the model, as well as the ongoing cost or operations and maintenance.

- To make this financial model more accurate, students also attempted to account for inflation, cost/revenue differentials from year to year, internal rate of return, and competition from future roads, before making their final conclusion as to the financial advantages of the project.

The workshop generated a number of questions from students and professors, including NEXTRANS faculty members Professor Kumares Sinha and Professor Samuel Labi. This discussion focused a great deal on estimating user demand, and the variables that can arise in the real world over the span of decades. All in all, the workshop presented a strong experiential learning opportunity for students, who were asked to leave the classroom mentally in order to examine these real-world variables, and make their own calculations and evaluations based on the presented data. This will help prepare them for when they enter the transportation workforce, and are presented with complex, field-based problems that lack controlling parameters.

As a member of the Advisory Council, Fidel Saenz de Ormijana reinforced his role in bringing a private sector perspective to NEXTRANS Center activities, as well as further underlining the importance of public-private partnerships to the future of infrastructure construction and operation. In addition to working with NEXTRANS, Saenz has over 25 years experience in engineering, both in the water resources and transportation fields. Since 1994, he has worked with Ferrovial Agroman designing international toll road Public-Private-Partnership (PPP) projects. His co-presenter, Ricardo Sanchez, has over 10 years experience in transportation engineering focused on analyzing traffic and revenue for toll road projects. Since 2002 he has worked with Cintra, the concessions arm of the Ferrovial Group, managing the preparation of traffic and revenue forecasts.

To view the case study and presentation slides, visit http://www.purdue.edu/dp/nextrans/pppworkshop.php

From left: Jon Fricker, Luis Amigo, Fidel Saenz, Ricardo Sanchez, Kumares Sinha, Srinivas Peeta, and Jesus Gonzalez

Fidel Saenz speaks with Kumares Sinha and Jon Fricker after presentation
Director Peeta Promotes Workforce Development at Indiana Logistics Summit

The sixth annual Indiana Logistics Summit was held in Indianapolis on Nov. 12, 2008, giving Center staff the opportunity to share NEXTRANS workforce development goals with colleagues from throughout the region. Presented by the Ports of Indiana and Purdue University, the summit brings together leaders from the worlds of industry, academia, public policy and government to discuss how to make Indiana’s transportation, distribution and logistics businesses more competitive.

The day-long program featured opening remarks by NEXTRANS Advisory Council Member Rich Cooper (CEO, Ports of Indiana) and Victor Lechtenberg (Vice Provost for Engagement, Purdue University). These were followed by five sessions addressing logistics in Indiana and opportunities for the future. Presenters included representatives from the trucking, airfreight, and maritime industries; the public sector; and private sector companies from fields such as pharmaceuticals and food logistics. Throughout the day, participants were given the opportunity to visit Purdue’s informational booth, which featured literature on NEXTRANS, Purdue’s Global Supply Chain Management Initiative, and statewide College of Technology.

NEXTRANS Director Srinivas Peeta served as a panelist during the final session of the day, titled “Our Logistics Workforce & University Resources.” Moderated by NEXTRANS Executive Committee Member John Schneider (Assistant Vice President for Industry Research, Purdue University), the session also featured panelists Doug Williams (President – Venture Logistics), Timothy Minnich (President – TransWorks), Kurt Gogolin (Director of Materials Management – Wabash National), Ed Wolking (President – Great Lakes Manufacturing Council), Frank Moman (Dean of the School of Business at Central Region – Ivy Tech Community College), and Mark Frohlich (Associate Professor of Operations Management – IU Kelley School of Business).

NEXTRANS was cited several times during this Session as an example of how universities can work with industry to help create a workforce prepared to meet the transportation challenges of the future. Director Peeta discussed how the Center strives to respond to industry feedback in developing student initiatives, including internships, research opportunities, distance learning certificates, and special programs designed to attract non-engineers to the field. The general consensus of the panel was that universities have taken strong initiative in recent years to help meet industry needs; however, this is an ongoing process, one that requires stronger partnerships between university and industry representatives to be successful.

Additional information on the Indiana Logistics Summit is available at http://www.indianalogistics.com/summit/default.htm

Top: Srinivas Peeta listens in on workforce panel discussion.

Bottom, from left: Lili Du, Mary Pilotte, Srinivas Peeta, Jon Aull, and Mahmud Farooque in front of Purdue booth.
OSU Faculty Engage Students at OTEC 2008

How do University Transportation Centers affect my education? What advice would transportation professionals give me as a student pursuing a career in the industry? NEXTRANS faculty members from The Ohio State University attempted to answer these questions for students attending the 62nd Annual Ohio Transportation and Engineering Conference (OTEC), which was held in Columbus on October 28 – 29, 2008. Sponsored by the Ohio Department of Transportation and The Ohio State University (OSU), the conference focused on the 2008 Theme: “The Power of Multi-modal Transportation: Linking Ohio to the World on All Fronts.” NEXTRANS faculty members from OSU actively engaged students at this year’s conference to inform them on UTC activities and opportunities, and help them transition into transportation careers. Faculty also shared research projects co-sponsored by NEXTRANS with attendees at large.

Professor Mark McCord organized two panel sessions geared toward students attending the conference. Approximately 80 participants attended the first session, titled “University Transportation Centers in Ohio: What They Mean for Transportation Education and Practice.” OSU Professor and NEXTRANS Center Co-Director Rabi Mishalani served as a panelist during this session, which also included UTC Directors Stephen F. Duffy (University Transportation Center - Cleveland State University), Cynthia Hirtzel (Center for Transportation and Materials Engineering - Youngstown State University), Rich Martinko (University Transportation Institute - University of Toledo), and Ping Yi (Ohio Transportation Consortium - Akron University). These representatives discussed the work that is being conducted at their centers, and how this work is expected to impact transportation education and practice. The general consensus amongst the panelists was that the primary impact is presently occurring through the participation of students on research projects that otherwise would not be undertaken. In addition, efforts are underway to impact education by designing class modules around results being produced in UTC projects, and also by exposing high school teachers to the centers and the problems being addressed.

Professor McCord moderated the second session, which was titled “The Transportation Profession: Observations and Tips for Students From Transportation Engineers.” Attended by approximately sixty students, this panel session informed participants about the transportation profession and provided tips on starting their careers. After discussing their background and current projects, panelists answered student questions based on their own observations and experiences in the transportation industry.

Nearly 100 people attended The Ohio State University alumni breakfast, which featured a presentation by Professor McCord and Professor Benjamin Coifman. Their presentation, “Department of CEEGS Federally Funded Transportation Projects,” provided an overview of NEXTRANS sponsored projects at OSU, including the development of a unique campus transit laboratory, which NEXTRANS is partially supporting.

In addition to the day’s program, nearly 200 commercial and university representatives presented exhibits, allowing students, faculty, and industry representatives to share their most recent transportation research.
On November 6, 2008, Professor Venky Shankar delivered a presentation to faculty and students at the Purdue University School of Civil Engineering. In a lecture titled “Consideration of Frameworks for Incorporating Accident Severity Heterogeneity in Traffic Safety Modeling,” Dr. Shankar presented methodological perspectives on frameworks for addressing severity heterogeneity that occurs in reported traffic accident injury outcomes. An empirical context was then described to illustrate a data-centric view on this framework. Preliminary results from sample model structures were also discussed.

Venky Shankar is an Associate Professor in the Department of Civil and Environmental Engineering at Pennsylvania State University. He joined Penn State in 2004 after five years as Assistant Professor in the Department of Civil and Environmental Engineering at the University of Washington, Seattle. Shankar’s research interests are in econometric applications to transportation systems analysis. He is currently serving as principal/co-principal investigator on two national projects funded by the National Cooperative Highway Research and Strategic Highway Research programs.

Managing Cross-Modal Conflicts on Multimodal Transport Networks

Professor Michael Cassidy recently visited the University of Illinois at Urbana-Champaign and The Ohio State University to deliver lectures as part of the NEXTRANS Seminar Series. The lecture, titled “Managing Cross-Modal Conflicts on Multimodal Transport Networks,” examined the disruptive vehicular interactions that arise when different modes, such as cars, buses, and bicycles, share the same roadway. It went on to describe how the thoughtful management of these cross-modal conflicts can enhance accessibility for all users of a transport system, while encouraging the use of greener travel modes.

The discussion began with freeway carpool lanes that are reserved for cars that carry more than a predetermined number of occupants. Spatiotemporal analysis of real data show that a carpool lane’s presence diminishes vehicle lane-changing maneuvers which, in turn, can smooth and increase the discharge flows in adjacent lanes. Thus, even underutilized carpool lanes can increase freeway bottleneck capacities to benefit all commuters; and broader impacts of this smoothing effect are explored theoretically. It stands to reason that even greater benefits can be achieved by deploying reserved lanes to segregate more distinct modes, such as cars and buses. Our theories show that converting a roadway lane to bus-use only can improve travel conditions not just for the bus users, but for car travelers as well, both when facilities are congested and when they are not. The seminar ended with a discussion of one innovative idea for managing conflicts that arise when segregated travel modes re-coalesce at roadway intersections. Benefits are predicted for a signalized intersection with high demand for both cars and bicycles, as is common in cities within the developing world.
UAIC Faculty Speak at Illinois Traffic Engineering & Safety Conference

Professionals from industry, the public sector, and academia convened on October 22 – 23, 2008 for the Annual Illinois Traffic Engineering & Safety Conference. For nearly six decades, this conference has provided participants with cutting-edge information on transportation research, government policies and regulations, product development and testing, product evaluation, and computer hardware and software developments. This year’s sponsors included the Illinois Department of Transportation, the FHA (Illinois Division), the NHTSA (Great Lakes Region), and the University of Illinois at Urbana-Champaign (UIUC). The two-day session featured two general sessions, in addition to several concurrent sessions on Safety, Traffic Operation and Management, and Traffic Engineering.

A number of NEXTRANS students and faculty members from UIUC attended this year’s conference, including NEXTRANS Center Co-Director Ray Benekohal, and Executive Committee Member Imad Al-Qadi. Professor Al-Qadi, who is the Founder Professor of Engineering at UIUC and serves as Director of the Illinois Center for Transportation, delivered a presentation titled “Update on Safety Research Projects at IDOT” during Friday morning’s general session. Professor Benekohal presided over Thursday afternoon’s luncheon program, in addition to giving the conference’s final presentation, titled “Effectiveness of the Illinois Speed Photo Enforcement Program.”

As one of the premier meetings in the Midwest region, the Illinois Traffic Engineering & Safety Conference gave participants a chance to discuss ideas and issues with experts, gain job-related information and renew their sense of professional purpose. This year’s conference also gave NEXTRANS faculty members from UIUC the opportunity to share Center goals and activities with the transportation community by networking with colleagues in the Illinois area.

Michael Cassidy received his doctorate in Civil Engineering from UC Berkeley, where he is currently a Professor in the Department of Civil and Environmental Engineering. Before joining the Berkeley faculty, he was an Assistant Professor at Purdue University in the School of Civil Engineering. He currently serves on the editorial advisory board for the journal Transportation Research - Part B, and is a member of the Transportation Research Board’s Committee on Traffic Flow Theory. His research interests focus primarily on transport operations, particularly in the areas of highway traffic and public mass transit.
Welcome Lili Du, Research Associate

Lili Du recently joined the NEXTRANS Center team as its first full-time Research Associate. Lili’s major roles are to conduct center-associated research and outreach activities, identify and pursue new funding opportunities for the Center, and participate in the writing of research proposals and research reports.

Lili holds a Ph.D in Decision Sciences and Engineering Systems (Rensselaer Polytechnic Institute, 2008), an MS in Operation Research and Statistics (Rensselaer Polytechnic Institute, 2007), an MS in Industrial Engineering (Tsinghua University, China, 2003) and a BS in Mechanical Engineering (Xi’an Jiaotong University, China, 1998). Her research interests broadly include: Intelligent Transportation System (ITS) Modeling and Optimization, particular in Vehicular Ad Hoc Networks, Vehicle Routing, Traffic Safety, Network Design and Modeling under Disaster, and Logistic & Supply Chain. Lili’s current NEXTRANS research includes building a strategic planning framework to enhance infrastructure network survivability and functionality under disasters, and working on VANET application in traffic congestion management.
Thea Graham is currently the Manager of Strategy for the Office of Strategy and Performance within the Federal Aviation Administration’s Air Traffic Organization. Graham holds a Ph.D. in Regional Economics from the Department of Agricultural Economics at Purdue University.

“As a 1997 Purdue graduate,” she says, “I am always interested in helping Purdue address the needs of the Midwest and nation. I volunteered to be a member of the NEXTRANS Advisory Council because transportation is particularly vital in keeping our nation’s economy moving.”

After completing her Ph.D. in 1997, Graham moved to Washington, D.C. to work as an economist for the Department of Commerce, Bureau of Economic Analysis. In 2000, she joined the Department of Transportation to conduct multi-modal transportation research. Her areas of interest include aviation economics, input-output analysis, and productivity. Currently, her research focus at the FAA includes the economic impact of aviation, the impact of aviation on the productivity of the U.S. Economy, and global strategies and economic analysis for North Atlantic oceanic operations. “We have also been keeping abreast of the research being conducted through the NEXTRANS Center,” she says, “and will continue to monitor the outcomes to add to the research being done here at FAA.”

In terms of the NEXTRANS Center’s goals, Graham claims it is the theme of "integrated solutions" that she finds most appealing. “Transportation services and infrastructure are not created in a vacuum,” she says, “and only focusing on ‘silo’ solutions will hold the nation’s economy back in today’s changing global environment. The Midwest Region is the heart center of the U.S. and keeping infrastructure maintained and modernized in a holistic approach is crucial for economic development and growth.” Graham’s involvement in Center activities to date included her attendance at the NEXTRANS Inaugural Summit in May 2008. As one of nearly 200 participants who attended the day-long program, Graham was “very impressed with the local and state involvement” the Summit demonstrated. She was especially captivated by the efforts of students, who were “very thoughtful and inspired about the future of transportation.”

The NEXTRANS Center thanks Thea Graham for her continued support, and looks forward to her involvement in future Center activities.

University Partners

Purdue University, Lead Institution & Major Partner
The Ohio State University, Major Partner
University of Illinois at Urbana-Champaign, Major Partner
Martin University, Strategic Partner
University of Wisconsin, Platteville, Strategic Partner
Indiana University-Purdue University at Indianapolis, Institutional Resource Partner
Illinois Institute of Technology, Institutional Resource Partner

Center Staff

Srinivas Peeta, Ph.D. Director
Mahmud Farooque, Ph.D. Managing Director
Lili Du, Ph.D. Research Associate
Jessica Mehr Communications Coordinator

“The Midwest Region is the heart of the U.S. and keeping infrastructure maintained and modernized in a holistic approach is crucial for economic development and growth.”
THE NEXTRANS CENTER DEVELOPS INTEGRATED AND INNOVATIVE SOLUTIONS TO TRANSPORTATION PROBLEMS BY EXPLICITLY STUDYING THE INTERACTIONS BETWEEN VEHICLE, TRAVELER, AND INFRASTRUCTURE.