2ND-YEAR PROJECTS DEMONSTRATE HOLISTIC APPROACH

Since its inception in 2007, the NEXTRANS Center has recognized that transportation goals such as mobility, safety, and infrastructure renewal are interdependent, and that priorities within these goals change over time. Embracing this vision, the Center has developed a holistic framework for project selection that is systematic, integrated, amenable to continuous improvement, and adaptable to changing priorities.

- It is **systematic** because it uses a transparent selection process that considers theme, relevance, cost-share, merit and peer reviews in moving projects from a research need statement through full proposal development and on to the project selection.

- It is **integrated** because it requires each proposal to address multiple goals, modes and methods, while leveraging technology and innovative partnerships.

- It is **amenable** to continuous improvement because the quantifiable outcome measures easily identify whether research dimensions are being adequately addressed.

- It is **adaptable** to changing priorities because the goals can be adjusted based on short and long-term needs, technological and economic opportunities, regional and national concerns, and stakeholder input.

The recent selection of the Center’s second-year projects (pages 4-5) has provided a set of outcome measures that demonstrate the efficacy of this selection process:

- $2 million of federal support has been matched with more than $2.3 million actual Non-Federal cash support.

- 35 research projects have been awarded across 5 universities in Indiana, Illinois, Ohio, and Michigan.

- 65% of the awarded projects addressed multiple goals; 53% examined solutions that exploited multiple modes; 76% leveraged existing, new and emerging technologies; and 44% studied prospects for partnerships.

- Year-to-year comparisons show successful increase in the number of partnership-related projects (31% vs. 56%) and the continuing need for projects that employ innovative financing (31% vs. 22%).

(Continued on Page 2)
Ur nation’s transportation challenges have been receiving a great deal of public attention. The U.S. Department of Transportation (USDOT) has taken a high profile role in economic recovery and infrastructure renewal, issued new fuel economy standards, unveiled a Strategic Plan for high speed rail, and been involved in efforts at the multi-agency level regarding the future of U.S. automakers and energy security (USDOT Progress Report, April 2009).

With so many transportation challenges and opportunities on the horizon, University Transportation Centers (UTCs) have an active role to play in sponsoring relevant, innovative research. This Research Issue highlights the NEXTRANS Center’s dedication to helping meet national and regional priorities, as demonstrated by its research selection process (pages 1-2) and the integrated solutions pursued by our recently-awarded projects (pages 4-5).

In addition to funding 18 new projects, our Center has participated in a number of educational and outreach activities. In its inaugural year, the NEXTRANS Summer Undergraduate Internship in Transportation attracted applicants from across the nation, including California, Oregon, New Jersey, Florida, Tennessee, Ohio, and Illinois. The selected student interns highlighted their accomplishments in presentations delivered at Purdue University on July 27, 2009 (pages 6-7). I was happy to learn that several of these students are already considering pursuing graduate-level degrees and careers in transportation as a result of their work this summer.

NEXTRANS researchers and partners have also been involved in outreach efforts of state, regional, and international importance. These events focused on topics including bearing capacity of roads, solar-powered lighting, and travel demand modeling training (pages 8-9).

In other news, we are happy to welcome Nija Phelps to the NEXTRANS Center team as our new Secretary.

I hope you enjoy this issue of the NEXTRANSporter. Please visit www.purdue.edu/dp/nextrans for more information about our current activities.

2ND-YEAR PROJECTS DEMONSTRATE HOLISTIC APPROACH
(Continued from Page 1)

As these figures demonstrate, the NEXTRANS framework is successfully selecting projects that support its mission of integrating goals, exploiting multiple modes, leveraging innovative technologies, and exploring new models for partnerships. At the same time, the projects selected thus far address some of the critical priorities outlined by Transportation Secretary Ray LaHood, such as incorporating safety with other transportation goals, and building new infrastructure focused on economic opportunities and long-term sustainability. Because the selection process is designed to be adaptable, new priorities can be easily incorporated in the future without changing the framework itself.

In this Research Issue, NEXTRANS invites you to explore the wide array of transportation topics addressed by the Center’s second-year projects (see pages 4 – 5). To learn more about these and previous projects, please visit http://www.purdue.edu/dp/nextrans.
TRAFFIC FLOW CHARACTERISTIC AND CAPACITY IN INTELLIGENT WORK ZONES

Investigated by Rahim F. Benekohal (University of Illinois at Urbana-Champaign)

Every year, bottlenecks created by work zones cost time, money, and lives. In 2007, 835 fatalities and 105 fatal occupational injuries resulted from motor vehicle crashes in work zones (FHWA “Facts and Statistics”). Maintenance-induced congestion is another serious concern, since lower speed limits in work zones can cause a reduction in roadway capacity.

Various Intelligent Transportation Systems (ITS) are implemented in U.S. work zones to help eliminate safety concerns and improve roadway capacity. Since the most predominant type of crashes in work zones are rear-end collisions, the implementation of ITS in work zones is primarily aimed at preventing speeding and reducing speed variation among vehicles. These ITS techniques include automated speed photo enforcement, dynamic lane management, variable speed control, and speed or time display.

Since these technologies create new interactions between driver and infrastructure, the traffic flow in ITS-enabled work zones can be different than in regular work zones. While past studies have explored the effect of ITS on vehicle speed, the influence of ITS on work zone capacity has yet to be investigated. If roadway capacity was improved in addition to controlling speed, agencies could not only reduce vehicle queues, but also decrease the potential of rear-end collisions.

The goal of this NEXTRANS project is to determine the speed-flow relationship in work zones where ITS is employed to control speed. Once the speed-flow relationship is established, capacity for ITS-enabled work zones can be accurately estimated. This will provide more efficient operation in a real-time system, more appropriate information on travel pattern, more accurate diversion and traveler information for alternate routing, and improved reliability of the system. Establishing the speed-flow relationship will also confirm whether the use of ITS in work zones alters the relationship between traffic flow parameters.

**Determining the influence of ITS on work zone capacity will help agencies improve safety and reduce work zone congestion.**

Preliminary data show that implementing ITS in the form of automated speed radar photo enforcement improves speed uniformity in work zones, and reduces the proportion of very short headways (gaps between vehicles of 0.5 – 1 second). When groups of vehicles are traveling in platoon, these very short headways increase the chance for multivehicle rear-end crashes.

By integrating technology into traffic management, and explicitly studying the interactions created between vehicle, traveler, and infrastructure, NEXTRANS researchers are able to address multiple goals at once. Determining the influence of ITS on work zone capacity will help agencies improve safety, reduce work zone congestion, and lower the cost of infrastructure renewal projects.
2009 PROJECTS

Traffic Signal Coordination and Queue Management in Oversaturated Intersections

Rahim Benedkohal, University of Illinois at Urbana-Champaign

Traffic signal coordination in congested networks is complex and requires in-depth understanding of traffic flow characteristics. This research aims to advance the basic understanding of optimizing traffic flow in congested networks. Oversaturated conditions in these networks often cause queue spillbacks that affect adjacent lanes or nearby intersections. Researchers are developing a traffic signal coordination methodology for a network of oversaturated intersections, based on the concept of queue minimization.

Determining Queue and Congestion in Highway Work Zone Bottlenecks

Rahim Benedkohal, University of Illinois at Urbana-Champaign

Traffic flow in work zones often operates in stop-and-go condition, creating multiple shockwaves that interact with one another. This study investigates shockwave and queue formation in congested work zones (WZ), and is developing ways of managing its adverse effects. This will help practitioners design and operate work zones in safer, more efficient ways. These results may also be integrated with communication, computing, and vehicle sensing techniques to create an on-line queue management strategy.

Thermal Cracking Performance Prediction and Asset Management Integration

William Buttler, Glaucio Paulino, University of Illinois at Urbana-Champaign

Low-temperature cracking of hot-mix asphalt (HMA) pavements continues to be a leading cause of premature pavement deterioration in cold regions. This study aims to deliver a user-friendly, computationally efficient program that can be used to analyze and design against thermal cracking in asphalt pavements. This new tool will help prevent unnecessary infrastructure damage in cold regions around the world.

System Methods for Uncovering Economic, Technological, and Policy Enablers of an “On-demand air service” Regional Passenger Transportation Solution

Daniel De Laurentis, Srinivas Peeta, Purdue University

This project explores the idea of a commercial on-demand air service (ODAS) utilizing very light jets. If ODAS can deliver better speed and flexibility in door-to-door transportation than commercial airline service or other modes, then it could generate significant economic benefits in the Midwest with moderate investment. Research is being conducted to explore what multimodal resources (air and ground), transportation policies, and economic variables are likely to enhance “doorstep-to-destination” mobility for citizens seeking personal and business trips.

A Multi-Scale Approach For Near Surface Pavement Cracking and Failure Mechanisms

C. Armando Duarte, Imad Al-Qadi, University of Illinois at Urbana-Champaign

This study aims to investigate near surface failure and cracking mechanisms of hot-mix asphalt (HMA) pavements, using recently emerged numerical techniques. Researchers are developing a multi-scale, digital HMA pavement model that will allow distress predictions with simplified user inputs. Integrating these models into the design process will help to develop long-lasting and cost-effective flexible pavements.

Innovative Vehicle Classification Strategies: Doing More for Less

Benjamin Coifman, The Ohio State University

Many highways use dual loop detectors to classify vehicles and determine roadway usage. This project aims to extend vehicle classification coverage to single loop detectors (and non-invasive detectors that emulate single loop detectors). This would allow agencies to leverage existing single loop detectors, and improve reliability of dual loop detectors when one loop fails. In addition, researchers are investigating alternatives for vehicle classification, such as LIDAR to monitor passing vehicles.

Transportation and Socioeconomic Impacts of Bypasses on Communities: An Integrated Synthesis of Spatial Econometric Methods and Agent-Based Simulation

Jon Fricker, Purdue University

This project seeks to minimize the adverse impacts of bypasses on communities. Researchers are developing statistical models to predict regional economic impacts, as well as the individual decision-making processes of affected landowners. These models can potentially reduce the subjective element of the sometimes-controversial issue of bypasses, and may help to promote partnerships between local community organizations and the private sector.

Impact of Public Transit Market Share on Energy Consumption and the Environment: Developing Statistical Models for Validation and Gross Predictions

Prem Goel, Rabi Mishalani, The Ohio State University

There are numerous models currently used to evaluate the effectiveness of transportation policies on energy consumption and the environment. This study aims to develop a set of empirically derived statistical relationships that can evaluate the accuracy of these mechanistic models, allowing researchers to provide better answers to policy questions. These empirical relationships might also be used to roughly evaluate the effectiveness of new transportation policies before beginning detailed and costly analyses.

Machine Vision Inspection of Railroad Track

J. Riley Edwards, Christopher Barkan, Narendra Ahuja, University of Illinois at Urbana-Champaign

The objective of this project is to increase the efficiency and effectiveness of railroad track inspection by applying machine vision, an advanced visual sensing technology. This is being accomplished by recording images of track from a moving vehicle using digital video and imaging technology, and using advanced machine vision algorithms to detect broken or defective track components. The results will be communicated to railroad infrastructure management to enable safer and more efficient maintenance and operation.
Financial and Technical Feasibility of Dynamic Congestion Pricing as a Revenue Generation Source in Indiana – Exploiting the Availability of Real-Time Information and Dynamic Pricing Technologies
Sam Labi, Kumares Sinha, Purdue University
This project aims to study the feasibility of dynamic congestion pricing (DCP), which allows toll prices to increase or decrease in response to traffic conditions. This could provide a sustainable approach to reducing traffic congestion and generating highway revenue. Researchers are conducting numerical experiments to determine the technical and economic feasibility of dynamic pricing, and identify any threats or opportunities that might arise during its implementation.

Optimal Condition Sampling of Infrastructure Networks
Rabi Mishalani, Prem Goel, The Ohio State University
When evaluating infrastructure condition, agencies must consider the cost of inspection, and make smart decisions in terms of condition sampling. Recently, this problem was addressed at the facility level. This study aims to address the condition sampling optimization problem for a network of facilities, using both statistical and network modeling.

Public-Private Partnerships in Highway Reconstruction, Rehabilitation, and Operations
Sam Labi, Kumares Sinha, Purdue University
This project aims to create a simple, Excel-based expert system that will aid in analyzing potential public-private partnerships. Researchers are establishing the project characteristics that are most appropriate for each type of project delivery, based on cost-effectiveness to the agency. They will then develop a system to help agency decision-makers select the best approach for a given project based on its characteristics and possible consequences.

Incorporating Image-Based Traffic Information for AADT Estimation: Operational Developments for Agency Implementation and Theoretical Extensions to Classified AADT Estimation
Mark McCord, Prem Goel, The Ohio State University
Annual average daily traffic (AADT) is traditionally collected from “on the road” sensors that disrupt traffic and expose crews to danger. In this project, investigators are working with the Ohio DOT to implement a new method that combines information from existing air photos with traditional ground-based traffic counts to produce more accurate AADT estimates. Researchers will also investigate the potential of extending this method to classifying vehicles.

Smart Campus Transit Laboratory for Research and Education
Rabi Mishalani, Prem Goel, Mark McCord, The Ohio State University
NEXTRANS investigators, various OSU entities, and Clever Devices, Inc., are currently upgrading OSU’s Campus Area Bus Service (CABS) with a state-of-the-art “smart bus” system. This new system includes advanced vehicle location (AVL), automated passenger counting (APC), and a passenger information system. It also creates an infrastructure for research and education: the OSU Campus Transit Lab (CTL). Activities will include researching operations and service planning questions, developing a simulation tool, and studying passenger perceptions.

Development of a Mobile Probe-Based Traffic Data Fusion and Flow Management Platform for Innovative Public-Private Information-Based Partnerships
Srinivas Peeta, Purdue University; Xuesong Zhou, University of Utah
This project aims to maximize the value of mobile probe data collected by private sector vendors (GPS, mobile phones, etc.) in order to encourage information-sharing under public-private partnerships. Researchers are quantifying the value of different data sources and optimizing traffic sensor locations based on data availability. Mobile probe data is being used to evaluate sensor quality for state DOTs, identify major bottlenecks, and assess travel time reliability. Researchers are also developing traffic management mechanisms that offer incentives to drivers who take alternate routes provided by their GPS devices.

Development of Carrier-Carrier Collaboration and Transfer Location Models for Less-Than-Truckload Freight Logistics
Srinivas Peeta, Purdue University
With the upward trajectory in fuel prices, freight transportation systems are struggling to survive. This project aims to develop dynamic models by which small to medium-sized trucking firms in the less-than-truckload (LTL) industry can collaborate in order to better utilize existing infrastructure and advances in information and communication technologies (ICT). The study will also propose models for identifying efficient transfer locations, which may lead to the building or renewing of inter-modal terminals.

Using Detector Data to Identify and Examine Crashes and Incidents on Freeways
Peter T. Savolainen, Wayne State University
This study is using data collected by the Michigan Intelligent Transportation Systems (MITS) Center to evaluate freeway operations in metro Detroit. Researchers are identifying factors that affect the incident response and clearance times of Freeway Courtesy Patrol (FCP) vehicles, potentially improving freeway operations and safety. Researchers are also examining what incident-related factors lead to secondary crashes and determining if dynamic message sign (DMS) alerts have a significant impact on downstream traffic flow.

Effect of Friction on Rolling Tire-Surface Interaction
Ilinca Stanciulescu, Imad Al-Qadi, University of Illinois at Urbana-Champaign
Modeling the interactions between tire and pavement can be difficult, especially in scenarios such as tires sliding on ice, rolling on sand, etc. For this project, researchers are developing nonlinear frictional contact models for tire-pavement interaction that take into account the vehicle sliding velocity. This will help determine the ideal combination of tire and pavement properties that lead to shorter braking distances, enhanced tire-pavement friction, and better pavement performance. This will improve driver safety and reduce costs by preventing pavement damage.
2009 UNDERGRADUATE INTERNS GAIN HANDS-ON EXPERIENCE

The NEXTRANS Center’s Undergraduate Summer Internship in Transportation provides competitively-selected undergraduate students with the opportunity to complete a program of transportation research and activities at Purdue University, the University of Illinois at Urbana-Champaign, or The Ohio State University. Participants are exposed to the field of transportation through hands-on, collaborative research under the guidance of NEXTRANS faculty members and graduate researchers. This year’s participants were:

Erin Kersh is pursuing a B.E. in Civil Engineering and a B.S. in Mathematics at Vanderbilt University. For her internship, Erin worked with NEXTRANS Director Srinivas Peeta and Research Associate Lili Du (Purdue University) on research that aims to enhance the ability to manage network traffic flow under disasters. Erin’s role was to run a program that helps agencies identify the most optimal links in the network for upgrade. After graduation, Erin plans to pursue a Master’s Degree in Civil Engineering.

Dan Brandesky is pursuing a B.S. in Electrical Engineering at The Ohio State University. For his internship, Dan worked with Professor Benjamin Coifman (OSU) on two projects. One aims to determine the feasibility of using existing freeway loop detectors to predict traffic congestion. The second is investigating a new method of collecting traffic survey data via detectors mounted on vehicles. Dan’s future goal is to work in the field of transportation designing systems for urban traffic flow management.

Divya Kumar holds a B.S. in Civil Engineering at the New Jersey Institute of Technology (May 2009). For her internship, Divya worked with NEXTRANS Director Srinivas Peeta and Graduate Researcher Amit Kumar to analyze the convergence properties of traffic assignment algorithms for planning purposes. This information will be used to estimate the link/route flows and travel times in a network. Divya plans to pursue a Master’s Degree in Civil Engineering and eventually become a licensed Professional Engineer (PE).

Eunseok Choi holds a B.S. in Civil Engineering from the University of Illinois at Urbana-Champaign (May 2009). For his internship, Eunseok worked with Professor Yanfeng Ouyang (UIUC) on research aimed at providing more accurate traffic data for multimodal freight transportation systems. Eunseok helped to determine the prime sensor locations that will maximize the number of truck detections at minimum cost. Eunseok’s future plans are to complete a Master’s Degree at UIUC and eventually work for a transportation consulting firm.

Matt Toussaint is pursuing a B.S. in Civil Engineering at the University of Illinois at Urbana-Champaign. For his internship, Matt worked with Riley Edwards (UIUC) to increase the efficiency and effectiveness of railroad track inspection and maintenance. Matt’s role was to analyze historical derailment data to determine causes of derailment specific to turnouts (sections of track that divert trains from one track to another). After graduation, Matt hopes to secure a job in a railroad track maintenance department.

Kyle Bemis was competitively selected for a Discovery Park Undergraduate Research Internship (DURI). Co-sponsored by NEXTRANS, Kyle’s internship allowed him to work with Professor Dan DeLaurentis on a NEXTRANS project exploring on-demand air service (ODAS), which aims to enhance “doorstep-to-destination” mobility through the use of very light jets. Kyle’s role was to aid in developing statistical models of multimodal transportation networks. He plans to obtain a Master’s Degree in Statistics from Purdue and pursue a career in data analysis.
2009 INTERNS (Continued from previous page)

In addition to participating in field trips and submitting regular progress reports, interns were required to deliver formal presentations showcasing their work on July 27, 2009 at Purdue University’s Discovery Park. This event was an opportunity for interns to share their research accomplishments with faculty, graduate mentors, and other undergraduate students from all three institutions, as well as the NEXTRANS Center staff, and Discovery Park Associate Director Pankaj Sharma. In addition to gaining insight about a variety of transportation topics, interns received encouragement and guidance in considering graduate-level education and transportation-related careers.

CHENG CHEN

Cheng Chen is currently a Ph.D. student at The Ohio State University’s Department of Civil & Environmental Engineering & Geodetic Science. He holds a Master’s Degree in Roadway and Railway Engineering (2006) and a BS in Civil Engineering (2004) from Tongji University in Shanghai. There, he received a number of honors, including the Distinguished Graduate Award (2004).

Cheng is currently assisting NEXTRANS Co-Director Rabi Mishalani, and NEXTRANS researchers Mark McCord and Prem Goel on a number of NEXTRANS projects. Cheng helped to develop a bus simulation tool and sampling model for the OSU’s “Smart Campus Transit Laboratory for Research and Education.” He is aiding in the creation of a network-level model that will minimize the cost of infrastructure management by helping agencies make smart condition sampling decisions (“Optimal Condition Sampling of Infrastructure Network”). He is also helping to implement a method for producing more accurate Annual Average Daily Traffic (AADT) estimates using existing air photos (“Incorporating Image-Based Traffic Information for AADT Estimation: Operational Developments for Agency Implementation and Theoretical Extensions to Classified AADT Estimation”).

Cheng’s other research interests include forecasting traffic demand for special events, and analyzing the impacts of construction on roads, bus lines, and tunnels.
TRAFFIC DATA WORKSHOP PROMOTES REGIONAL DIALOGUE

NEXTRANS researchers at The Ohio State University recently participated in the Midwest Traffic Monitoring Workshop on March 24-25, 2009. Executive Committee Member Mark McCord served as a member of the workshop planning team, and participated in a panel titled “Improving Availability and Use of Traffic Data in the Midwest.” Dr. McCord is currently conducting a NEXTRANS-sponsored project that aims to improve the accuracy of Annual Average Daily Traffic (AADT) data by leveraging existing air photos.

Organized by the Transportation Research Board (TRB) and hosted by the Ohio Department of Transportation (ODOT), the Midwest Traffic Monitoring Workshop provided a forum for Midwestern state and local agencies to share successful strategies for collecting, analyzing, disseminating, and using traffic data. Participants also emphasized the importance of maximizing productivity and results through regional collaboration.

NEXTRANS CO-HOSTS SOLAR POWER MEETING

The NEXTRANS Center, in collaboration with the Discovery Park Energy Center, hosted a Solar Power Initiative Exploratory Meeting at Purdue University on July 24, 2009. This meeting aimed to evaluate the possibility of utilizing solar power to provide electricity for lighting of major highway intersections.

The meeting was chaired by Leigh Morris, Deputy Commissioner, Toll Road Oversight, Indiana Department of Transportation and Chairman of the Board, Northwest Indiana Regional Development Authority. Participants included representatives from the State of Indiana; Duke Energy; NIPSCO; Indianapolis Power & Light; Inovateus Solar LLC; Indiana and Michigan Power; Indiana Economic Development Corporation; Indiana Department of Transportation (INDOT), Federal Highway Administration, Indiana Division; Purdue University; Discovery Park; the Joint Transportation Research Program (JTRP); and the NEXTRANS Center.

OUTREACH COURSE PROVIDES TRAINING FOR TRANSPORTATION PROFESSIONALS

On June 8-9, 2009, NEXTRANS and the Joint Transportation Research Program (JTRP) at Purdue University co-sponsored a two-day outreach course on travel demand model theory. Held in conjunction with the Indiana Department of Transportation’s (INDOT) annual TransCAD software training event, this course was led by Srinivas Peeta (NEXTRANS Director), Jon Fricker (Investigator), and Hillel Bar-Gera (Visiting Scholar). For two days, they provided in-depth information regarding the common 4-step modeling methods, theory, and best practices. Topics addressed included trip generation, trip distribution, traffic assignment, and travel demand forecasting.

In addition to gaining exposure to theory, participants were given hands-on exercises and sample problems. (For example, during Dr. Bar-Gera’s discussion of trip distribution, participants pretended to be in Disney World, trying to predict travel from resorts to theme parks.) Participants who attended both days of training were eligible to receive Continuing Education (CEU) Credit.

From Left: Jon Fricker, Srinivas Peeta, George Kalafatas, Aviral Shukla, and Lili Du pose during day one of travel demand model theory training at Purdue University.
DIRECTOR PEETA PRESENTS AT CUTC SUMMER MEETING

NEXTRANS Center Director Srinivas Peeta delivered a presentation on UTC Best Practices at the Council of University Transportation Centers (CUTC) Summer Meeting, which was held June 30 – July 2, 2009 in Amherst, MA.

Dr. Peeta’s presentation illustrated how the NEXTRANS Center aims to develop integrated solutions while responding to shifting USDOT priorities. The Center strives to achieve this goal through strategic internal planning; innovative partnerships; and an integrated, dynamic approach to project selection. Dr. Peeta also discussed the importance of the UTC Grant, results achieved during the first two years of operations, and risks the Center has taken. These include integrating university partners financially and programmatically, developing innovative partnerships driven by common goals, and continuously adapting to changing contexts.

The NEXTRANS Center was one of eight centers invited to present on UTC Best Practices at this year’s meeting, which was hosted by the University of Massachusetts Transportation Center. CUTC’s membership represents over 60 of the nation’s leading university-based transportation research and education programs.

UIUC FACULTY LEAD INTERNATIONAL CONFERENCE

The Eighth International Conference on the Bearing Capacity of Roads, Railways, and Airfields (BCR2A) convened at the University of Illinois at Urbana-Champaign (UIUC) from June 29 - July 2, 2009.

NEXTRANS faculty members from UIUC presented numerous papers and workshops throughout the 4-day event. The conference was chaired by NEXTRANS Investigator Erol Tutumluer, and Co-Chaired by Executive Committee Member Imad Al-Qadi. Investigator Christopher Barkan served as Railroad Area Coordinator. William Buttlar (Investigator) and Jeffrey Roesler (Faculty Affiliate) chaired conference sessions, and Riley Edwards (Investigator) served on the organizing committee (with Buttlar and Roesler).

Attracting 250 academics, researchers, and practitioners from 32 countries, this conference aimed to address the bearing capacity problems of roads, railways, and airfields. Bearing capacity issues are changing because of ever-increasing traffic volumes and weights, which require stronger and more durable pavements, railroad track structures, and superstructures.

BCR2A provided international experts in this field with an opportunity to exchange experiences and views, as well as identify the needs for further research and development. This conference is the eighth in the series that began in Trondheim, Norway in 1982 and occurs at four-year intervals.

SAVE THE DATE

NEXTRANS Conference on U.S./Canada border trade, security, and transportation issues

November 16, 2009
Purdue University
FACULTY PROFILE: SAMUEL LABI

Samuel Labi is currently an Assistant Professor at Purdue University’s School of Civil Engineering. His expertise is in systems engineering, life cycle costing, systems optimization, multiple criteria analysis, and transportation systems management.

As a NEXTRANS researcher, Dr. Labi aims to help transportation agencies make the most globally optimal infrastructure investment decisions, study the feasibility of dynamic congestion pricing, and develop an Excel-based expert system that will analyze potential public-private partnerships in terms of cost-effectiveness to the agency. In addition to these projects, he has carried out over 20 research studies as a PI or Co-PI for the Federal Highway Administration and the National Academies.

In 2008, Dr. Labi was a co-recipient of the prestigious K.B. Woods Prize for Best Paper in Design and Construction (Transportation Research Board). Other awards include the 2007 Bryant Mather Award for the Best Paper in Concrete Materials (American Society of Testing and Materials), and the 2002 Milton Pikarsky Award for Outstanding Ph.D. Dissertation (Council of University Transportation Centers).

Dr. Labi is a member of numerous professional organizations, and currently serves on the American Society of Civil Engineering (ASCE) Highway Pavement Committee; Planning, Economics and Finance Committee; and Advanced Technologies Committee. He is the author or co-author of approximately eighty papers in refereed journals and conference proceedings.

Of his work with NEXTRANS, he states: “The mission of the Center serves as a rallying point for my drive to seek and implement solutions that are innovative and integrated, cutting across different modes, asset system types, and program areas including pavements, bridges, safety, and congestion.”

Dr. Labi graduated from the University of Science and Technology in Kumasi, Ghana with a B.S. degree in 1987, and earned an M.S. and Ph.D. in Civil Engineering from Purdue University in 1997 and 2001, respectively.

YANFENG OUYANG NAMED KENT SCHOLAR

NEXTRANS researcher Yanfeng Ouyang was recently named the Paul F. Kent Faculty Scholar at the University of Illinois at Urbana-Champaign. The Kent Scholar is sponsored by the Paul Fraser Kent Memorial Fund, established in 1977 to provide support in the area of transportation engineering.

Dr. Ouyang has been a UIUC faculty member in the Department of Civil Engineering since August 2005. His research interests include the stability and efficiency of transportation and logistics systems, supply chain operations, infrastructure management, transportation safety, and traffic. His recent work with NEXTRANS aimed to make freight transportation systems more efficient by combining various off-the-shelf sensors to improve the granularity and accuracy of traffic data.

The NEXTRANS Center has served as a critical pillar of support in my research, providing an auspicious environment and platform for the fertile exchange of ideas across different functional areas in transportation.

Samuel Labi
Assistant Professor of Civil Engineering
Purdue University
RANDALL BLANKENHORN

Randall Blankenhorn has over 20 years of experience in the planning, development, and implementation of transportation infrastructure projects for the Illinois Department of Transportation (IDOT). He is currently Executive Director of CMAP, the Chicago Metropolitan Agency for Planning, which is responsible for land use and transportation planning across the seven counties that make up northeastern Illinois.

Blankenhorn has a demonstrated interest in the NEXTRANS Center’s theme of integrated solutions. In a recent speech he stated, “We have to stop looking at problems in silos, focusing on one issue at a time. Instead, we must start finding solutions that build on each other” (University of Illinois at Chicago, May 8, 2009).

Under his leadership, CMAP takes an integrated approach to the Chicago region’s challenges, with an emphasis on changing how development and infrastructure investment decisions are made. Prior to joining CMAP in 2006, Blankenhorn served as IDOT’s Bureau Chief of Urban Program Planning, coordinating activities of the 14 metropolitan planning organizations across Illinois.

As a member of the Advisory Council, Blankenhorn draws on his regional expertise in evaluating potential NEXTRANS projects, helping to ensure they are synergistic with Region V’s current needs and priorities. According to Blankenhorn, these “regional solutions are interwoven—not just with each other, but with grand global challenges” (UIC, May 8, 2009).

In addition to reviewing research needs statements, Blankenhorn participated in a panel titled “Transportation, Logistics & Economic Development—Perspectives from the Region” at the NEXTRANS Inaugural Summit in May 2008.

NEXTRANS thanks Randall Blankenhorn for helping to further its mission as a Regional University Transportation Center, and looks forward to his involvement in future Center activities.