Research team presents value capture strategies

The research team for the Value Capture for Transportation Finance study presented the pros and cons of eight potential value capture strategies at a March 26 stakeholder workshop. CTS hosted the half-day event to share preliminary findings from the study and receive feedback for the final report. CTS director Robert Johns gave welcoming remarks and moderated the event.

The state legislature appropriated funding to CTS in 2008 to study the public policy implications of “value capture”—public financing methods that capture part of the increased value of private property following a public investment such as a highway interchange or transit station. CTS assembled an interdisciplinary research team to conduct the effort.

Principal investigators are David Levinson, the Braun/CTS Chair in Transportation Engineering and associate professor of civil engineering; Zhirong (Jerry) Zhao, assistant professor in the Hubert H. Humphrey Institute of Public Affairs; and Adeel Lari, research fellow in the Humphrey Institute. The team also includes Michael Iacono, a research fellow in the Department of Civil Engineering.

The workshop began with a presentation by Iacono about transportation and value creation.

CTS honors leaders, students at annual meeting

CTS presented the following awards at its Annual Meeting and Awards Luncheon on March 25 in Minneapolis.

Robert Johns, CTS director, opened the event and introduced CTS associate director Laurie McGinnis, who gave a report of CTS accomplishments over the past year and sketched plans for the next one. Johns returned to the podium to moderate the presentations of the distinguished service awards.

Richard P. Braun Distinguished Service Award: Former CTS director Richard Braun presented the award to Gene Skok, a retired research associate and adjunct professor in the Department of Civil Engineering. Skok is “a solid rock,” Braun said, “a technical person who hung in there on every job he’s been given...He comes through every time in a mild manner.” Skok voiced his appreciation for the honor, “especially [because it is] named after Dick Braun.”

Ray L. Lappegaard Distinguished Service Award: Former recipient Mike Sheehan said this year’s Lappegaard recipient, Doug Weiszhaar, “is truly a mentor for all of us.” Weiszhaar is vice president for special projects at WSB & Associates and previously served as deputy commissioner/chief engineer of Mn/DOT and as county engineer in Stearns County.

Inside

- Lukermann memoriam ..........3
- Eno Fellow..........................4

‘Smart Signal’ receives award

A system to monitor the performance of urban arterials and improve traffic flow received this year’s CTS Research Partnership Award. Dawn Spanhake, CTS assistant director for program and financial management, presented the award at the CTS Annual Meeting and Awards Luncheon held March 25.

The system—known as SMART-Signal (short for “Systematic Monitoring of Arterial Road Traffic Signals”)—is a real-time arterial performance monitoring system that uses traffic data from existing signal systems. The project was a joint effort of the University, Hennepin County, Mn/DOT, and the private sector. The research was funded by the Intelligent Transportation Systems (ITS) Institute at CTS and the Minnesota Local Road Research Board, with significant in-kind support from Hennepin County.

Henry Liu, an assistant professor in the Department of Civil Engineering, accepted the award on behalf of the project partners. Although traffic engineers have tools to measure real-time freeway performance, he said,
Richard Murphy Jr., Ron Erhardt, Robert Johns offer a bill to raise taxes.

cern of his party’s leadership that he would transport the committee despite the con

tected how he came to chair the House

tion.

motor vehicle sales taxes to transporta

t the H

tion committee despite the con

cern of his party’s leadership that he would offer a bill to raise taxes.

Robert Johns, Ron Have, Catherine Petersen

embrides his life,” Petersen said. Have recommended volunteering to everyone: “You get a lot more than you give.”

William K. Smith Distinguished Service Award: Last year’s recipient, Catherine Petersen, presented the award to Ron Have, president of Freightmasters, Inc. Have chairs the Minnesota Freight Advisory Committee and is a member of the Transportation Advisory Board of the Twin Cities metropolitan area. Have’s “spirit of volunteerism and creation of community

education and outreach, presented the education awards. New this year, CTS divided its student awards into two categories: the Matthew J. Huber Award, honoring students in engineering, science, and technology fields, and the new John S. Adams Award, honoring students in policy and planning fields. The Huber Award is named in honor of the late Professor Emeritus Matthew J. Huber (civil engineering); the Adams Award honors Professor Emeritus John Adams (geography, public affairs), a significant contributor to transportation-related research, education, and outreach activities, Baas said, and a long-time supporter of CTS.

Matthew J. Huber Award: Two students received awards this year. Shan Hu is a master’s candidate in engineering management (mechanical engineering) at the University of Minnesota Duluth. Her work focuses on nonintrusive detection of driver drowsiness through a sensing system that monitors the heart rate of vehicle drivers. This project is currently one of four national finalists in the 3rd Collegiate Student Safety Technology Design Competition. Her advisor, Xun Yu, joked that the “problem” with Hu, his first graduate student, is that she raised his expectations: “I don’t know if I can have any other so good.” Hu said she is glad her research contributes to the field of transportation.

Evan Ribnick is a doctoral candidate in electrical engineering at the Twin Cities campus. His research, centered around computer vision and image processing, has focused extensively on transportation-related applications, including a specific project sponsored by the Department of Homeland Security to develop an automatic surveillance system to protect busy transportation hubs. His advisor, Nikolaos Papanikolopoulos, said Ribnick is a “dream student” who has been published in some of the best academic journals. “He

John S. Adams Award: One student received the 2009 Adams Award: Katie Roth, a candidate in the Master of Urban and Regional Planning Program at the Humphrey Institute of Public Affairs with an expected graduation in May. Her research has focused on innovative parking pricing and public attitudes toward congestion pricing and other transportation finance mechanisms. She served as president of the University’s Interdisciplinary Transportation Student Organization in 2007–08. Her advisor, Lee Munnich, noted that Roth presented findings of a Twin Cities congestion pricing study at the 2009 annual meeting of the Transportation Research Board.

Lee Munnich, Katie Roth, John Adams

ITS Institute Student of the Year Award: The U.S. Department of Transportation’s Research and Innovative Technology Administration presents an outstanding student of the year award to each of its University Transportation Centers (UTCs). The recipient of the 2008 award at the Intelligent Transportation Systems (ITS) Institute, a UTC housed at CTS, is Eddie Arpin, a recent graduate from the University of Minnesota with a master’s degree in mechanical engineering.

Gina Baas, Evan Ribnick, Nikolaos Papanikolopoulos
A transportation improvement increases accessibility to destinations; this increased accessibility increases land value. In some cases, a part of this created value can be captured to fund further transportation investment, he said, closing the feedback loop and spurring a new round of increased accessibility and development.

Zhao then placed value capture in the framework of transportation finance. On the one hand are user fees (such as the gas tax) paid by direct beneficiaries; on the other hand are general revenues (such as the sales tax) paid by the general public, which benefits indirectly through broad economic and social returns. Value capture mechanisms lie in between: They target the property owners and developers who benefit from increased land value. “The question,” Zhao said, “is how can we capture the value to invest in and improve the efficiency of the transportation system?”

Four of the project’s graduate students next described the eight value-capture strategies identified in the study and assessed them using four criteria: economic efficiency, equity, sustainability (as a stable funding source), and political/administrative feasibility.

- **Jason Junge** (advisor—Levinson): land value tax, transportation utility fees
- **Kirti Varidhan Das** (advisor—Zhao): tax increment financing (TIF), joint development
- **Kerstin Larson** (Zhao): special assessments, air rights
- **Michael Scharenbroich** (Levinson): negotiated exactions, development impact fees

Levinson then illustrated how strategies could be applied and combined along different dimensions. Some strategies are aimed at developers while others target property owners; some fees are paid before a transportation improvement, others afterwards; some strategies are applied on-site, others extend over a broader area; and so on. A new transit station, for example, could use several strategies: air rights for development above an underground facility, negotiated exactions at the site, and an impact fee across the affected area.

In the final presentation, graduate student **Sara Aultman** (who worked under Lari’s direction) reviewed highlights of current Minnesota law, innovative practices from other states, and potential statutory changes needed in Minnesota.

Throughout the workshop, the audience of state and local stakeholders offered input and asked questions, including a request to recommend strategies that warrant further study for Minnesota. Levinson advised policymakers to let “eight flowers bloom” and allow experimentation. Except for TIF, he said, the Twin Cities area lacks much experience with value capture, “so we should make use of the laboratory of democracy” to learn what unit of government is best suited for an approach. “Success will be emulated,” he predicted. Johns noted that CTS and University researchers play a neutral role by providing objective information for policymakers.

A draft report was delivered to the legislature on March 1, and a final report is due July 1, 2009.

For more information about the study, contact **Linda Preisen**, CTS research administration director, at 612-626-1808 or lpreisen@cts.umn.edu, or see www.cts.umn.edu/Research/ValueCapture. **CTS**

**In memoriam: Barbara Lukermann**

Barbara Lukermann, a former CTS Scholar, passed away March 22 after a short but intense bout with cancer. For more than 25 years, Lukermann was a senior fellow and faculty member in the Humphrey Institute’s planning program. She also helped found the University’s Center for Urban and Regional Affairs (CURA), where she was a senior research associate.

During her career, Lukermann influenced state and regional policy through her work in organizations such as the Minnesota Environmental Quality Board and the Governor’s Roundtable on Sustainable Development. She chaired the Metropolitan Waste Control Commission and St. Paul’s District Energy utility and served as president of the Citizens League.

Lukermann was involved in a number of CTS initiatives over the years, including the Transportation and Regional Growth Study, and received the 2001 Richard P. Braun Distinguished Service Award from CTS.

Also in her honor, the Humphrey Institute annually presents the Barbara L. Lukermann Service Award to students in the planning degree program for exceptional contributions to the planning community. And on March 31, the Humphrey Institute dedicated the Lukermann Conference Room in her recognition. **CTS**

**Adeel Lari, David Levinson, Jerry Zhao, Mike Iacono**

**Armin from page 2**

Arpin began working for the University of Minnesota’s Intelligent Vehicles (IV) Laboratory in September of 2006. At the same time, he began his thesis research on developing a vehicle-positioning system to work in urban environments, advised by ITS Institute director **Max Donath**. Arpin is currently employed as a research fellow at the IV Lab, working on a driver-assistive system for transit bus drivers.

Baas also announced that five students completed their graduate certificate in transportation studies this spring: **Reuben Collins**, **Ryan Gaug**, **Thomas More**, **Tyler Patterson**, and **Ryan Wilson**.

The ceremony concluded with the presentation of the Research Partnership Award (see page 1). **CTS**
similar approaches for urban arterials do not exist but are urgently needed. The development of SMART-Signal fills in this gap. “We can do much better to manage traffic...if we have the right tools.”

In their research, Liu and his students developed software and hardware to collect and archive data—about vehicles, signals, and pedestrians—and calculate real-time performance measures. The system contributes to scientific knowledge and also “has practical value to traffic engineers,” he said.

SMART-Signal has been instrumented on 11 intersections along France Avenue in Hennepin County since February 2007 and on six intersections of Mn/DOT Trunk Highway (TH) 55 since January 2008; another test site with 14 intersections will be instrumented on TH 13. Continuing research is focused on enhancing the system to allow automatic signal adjustment based on traffic conditions.

The University is currently in the patent application process to protect the intellectual property, Liu said. He also noted that his team has received a grant from the National Cooperative Highway Research Program to extend its work on SMART-Signal, and that the system is used as an education module in a civil engineering course at the University.

Project Partners
University of Minnesota, Department of Civil Engineering: Henry Liu, Wenteng Ma, Xinkai Wu, Heng Hu
Hennepin County: Eric Drager, James Grube, Roy Doron, Darryl Dobesh, Tom Switzer
Alliant Engineering: Bob Green
Mn/DOT: Steve Misgen, Ronald Christopherson, Mike Dittel, Shirlee Sherkow Spanhake also gave special partnership recognition to one other project: “Pervious Concrete Research in Minnesota.” This project brought together the Department of Civil Engineering, Mn/DOT, the City of Shoreview, Holcim USA, Cemstone, and Iowa State University’s Concrete Pavement Technology Center. The purpose of the project was to study the performance of pervious concrete for cold climates and develop suitable mix designs and construction practices.

Project Partners
Mn/DOT: Bernard Izevbekhai (also with University of Minnesota, Department of Civil Engineering), Benjamin J. Worel, Bruce Holdhusen
University of Minnesota, Department of Civil Engineering: Lev Khazanovich
City of Shoreview: Mark Maloney
Holcim USA: Joe Clendenen
Cemstone: Kevin MacDonald
Iowa State University Concrete Pavement Technology Center: Paul Wiegand cts

Student named Eno Fellow
The Eno Transportation Foundation has named Katie Roth a 2009 Eno Fellow. She is one of only 20 students selected nationally.

Roth was nominated by her advisor, Lee Munnich, director of the State and Local Policy Program at the Humphrey Institute of Public Affairs. She also received the inaugural 2009 John Adams Award from CTS (see page 2).

Eno Fellows participate in the Foundation’s Leadership Development Conference, an intensive week-long professional development program held each spring in Washington, D.C. At the conference, Eno Fellows receive a first-hand look at how national transportation policies are developed. CTS is underwriting part of the expenses for Roth to attend the conference this month.

The Eno Foundation is a non-profit charitable foundation dedicated to improving all modes of transportation. CTS