As a child, METRANS researcher Maged Dessouky remembers being fascinated by his father’s work as an engineering professor. “He always had a curiosity to solve any kind of problem—whether it was engineering or mathematical. I liked to look at his papers with a lot of equations that seemed like a piece of art at the time,” he recalls now.

That curiosity has clearly been inherited by the younger Dessouky. Today his research interests extend to problems on the factory floor, in transit systems, and even to hospital emergency rooms. He has mastered techniques of scheduling and routing that can be applied to numerous situations.

“I always knew I wanted to get a Ph.D.,” he says, “starting at the undergraduate level. In the meantime, to get to there, I wanted to get work experience. Once you start the Ph.D. track,” he explains, “you’re focused on research. Up until I made that commitment, I wanted as much real-world experience as possible.”

Mathematical Simulations. While getting his undergraduate degree in Industrial Engineering at Purdue University, he became interested in a relatively new field—mathematical simulations, which have now been applied in a wide variety of fields. He applied the technique at his first job for a simulation company founded by a Purdue professor. “We used simulation techniques for automobile manufacturing. We were scheduling parts through factories.”


Returning to graduate school, he earned his Ph.D. from the University of California, Berkeley in Industrial Engineering and Operations Research in 1992. He joined the USC faculty in 1993.

Today, Dessouky serves on the METRANS Executive Committee. His recent METRANS research is focused on trains.

“‘We’re the first people to solve rail networks with any combination of tracks—single, double, quadruple, etc.’ He explains that in the past, train scheduling simulations could

(Continued on page 2)
The 86th Annual Transportation Research Board Meeting in January was also a special occasion for METRANS Director Genevieve Giuliano. She delivered the Thomas B. Deen Distinguished Lecture, an honor recognizing significant career contributions and achievements in transportation. “It is a terrific honor,” she said in commenting on the award.

Giuliano’s presentation, entitled “The Changing Landscape of Transportation Decision-Making,” began by noting some negative trends in transportation, such as exceedingly long legislative processes and environmental reviews, massive cost overruns, the trend away from user fees to finance transportation investment, and “stove-piped” institutions that have an internal focus, rather than a broad view of transportation problems. She linked these symptoms to the trend in public decision-making to push decisions to lower levels of government — “devolution.” Largely identified with Reagan-era politics, devolution in transportation, said Giuliano, has been based on arguments about giving voice to local, homogeneous communities, using market-based solutions, etc.

Devolution has resulted in an increase in both the number of government units and the spread of financial authority among them. Although she noted that there is much to be said for empowerment of local communities, there are problems:

- Many public issues span community boundaries;
- There is often no incentive for cooperation across boundaries;

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MAGED DESSOUKY, cont.

(Continued from page 1)

be applied only to a single network.

Dessouky has been able to apply a simulation model for all rail operations in California. “They’re very messy and very complicated,” he remarks.

Applying the Train Model. Dessouky was involved in the planning of the Alameda Corridor, the high-speed rail connection between the two local ports and the massive rail switching yard in downtown Los Angeles. “The ports, SCAG (Southern California Association of Governments) and everyone realized that by 2020 the cargo from the ports will double and will blow up our railroads,” he continues.

Dessouky and his research team built a model of the entire region and showed where the rail system would break down and where investment would be needed. “At points east of the Alameda Corridor, the system can’t handle it.”

His research team provided alternate track configurations to increase capacity throughout the system. “Some must be done, and some are less critical.” They estimate the improvement costs to be well into the billions of dollars.

Future Rail Modeling. While regional rail models are useful, Dessouky has bigger dreams. “We want to develop a macro-level model, such as trains from here to Chicago, and across the entire country.” Such a simulation will be vastly more complicated. “You can’t run a micro-model on such a large scale,” he explains. “You must make some approximations and aggregate, and then take into consideration other things, like differing work rules for crews. These are constraints that must be embedded. But some of the micro-level issues, such as train deceleration, etc., can be ignored. We want to make train planning schedules from Los Angeles to Chicago. You could develop pretty accurate deliveries that way.”

Excellence in Teaching. Dessouky has received numerous awards for his work with students, including the USC Associates Award in Teaching, the university’s top award given to instructors.

Next. Maged Dessouky’s latest METRANS-funded project involves routing for delivery trucks.

Working with Prof. Fernando Ordoñez, Assistant Professor in the Daniel J. Epstein Department of Industrial and Systems Engineering, he anticipates it will take several years to create and test the simulation models. At that point, he is hopeful to obtain a National Science Foundation grant for the next phase.

Dessouky’s curiosity has led him from factory floors, telephone networks, and emergency rooms to truck routing and trains—fueled by a computer and a set of equations. Only imagination will limit his next destination.
METRANS Issues Call for Applied Research Program

Nineteen pre-proposals were received in response to the latest Call for Proposals in METRANS’ Monitoring the Ports program. “By the deadline on February 9,” said Tom O’Brien, Applied Research Coordinator, we received the largest number of proposals ever submitted to the program.” Funding is reserved exclusively for faculty at California State University, Long Beach. O’Brien noted that several proposals were written by faculty never before funded by METRANS. “We are thrilled,” he said.

Review Process. All two- or three-page pre-proposals will be subject to review by the METRANS Executive Committee.

“We expect to let faculty know by March 14,” he continued, “whether we will invite them to submit a full proposal.” Final proposals will be due by mid-April. The maximum award will be $40,000.

Monitoring the Ports is a program designed to support METRANS-funded technology transfer activities conducted by the CSULB Center for International Trade and Transportation. The goal is to develop an information base of sea-port operations and goods movement at the local ports.

METRANS Announces Recently Completed Research Projects

Note: All Reports are available at www.metrans.org.

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METRANS’ Mike Mahoney Leaves for Provost Posting

On March 1, METRANS Executive Committee member Mike Mahoney will take on the position of Provost and Vice President of Academic Affairs at California State University, East Bay (formerly Hayward). Currently he is Dean of the CSULB College of Engineering.

Having begun his career as a mathematician—not an engineer—changing jobs is not foreign territory to Mahoney. “I hold a Ph.D. in mathematics and started publishing in Computer Science areas in 1980,” he explained. “Since then, I’ve been Chair of the Computer Engineering and Computer Science Department for four years, Associate Dean for three years and Dean for seven years.” In the late 1990s he was also the Chief Information Officer for Academic Affairs at CSULB. He expects these experiences to help with his new job as Provost, he says, “because I can understand and help with the important work that faculty and several levels of administrators need to do.” He will miss METRANS, however.

“I have really enjoyed getting to know and working with both the USC and CSULB members of the METRANS Executive Committee and will really miss them,” he said. “Gen Giuliano has been a terrific leader of the overall center and Marianne Venieris has done a great job as our leader at CSU, Long Beach.”

Genevieve Giuliano, METRANS Director, praised Mahoney for his role in helping CSULB faculty understand the research opportunities presented by METRANS. “He has brought a number of outstanding researchers to our attention, helping achieve our mission through their applied research,” she noted.

Mahoney said he was attracted to the new job because of his love for the CSU system, including its “23 campuses, its very low student costs and its continued improvement toward excellence. Also, I’ve wanted to live in the Bay Area, but I’ve never had the opportunity until now.” He is excited about being Provost at a campus taking on some difficult issues of increasing enrollment and hiring faculty. “The campus is clearly on the upswing,” said Mahoney.
“Cooperation” was the operative word and port security was the focus at the Ninth Annual Town Hall Meeting, sponsored by METRANS and the Center for International Trade and Transportation on Feb. 7. More than 800 attended the session at The Carpenter Performing Arts Center at CSULB.

Michael Jackson, Deputy Secretary of the U.S. Department of Homeland Security (DHS), headlined the meeting.

An original video was premiered, featuring a large number of newly adopted technologies and systems for port security.

These included Radio Frequency Identification tags on containers, video camera surveillance, radiation portals, and the Customs Trade Partnership Against Terrorism (CTPAT) as well as procedures against terrorism mandated by various government offices—such as 24-hour advance manifest availability, 96-hour advance ship arrival notice and simple vigilance on the docks.

In the video, Mike Mitre, Port Security Chairman of the International Longshore and Warehouse Union (ILWU) emphasized that the majority of security incidents are discovered by longshore workers on the job.

Keynote Address. Keynote speaker Michael Jackson had been on a personal “mile-by-mile inspection” of the country’s borders, ending at Los Angeles and Long Beach, where he watched men and women at the docks working with Customs and Border Protection (CBP). “This is the place to go to see what the future looks like,” he said.

The future holds a worker identification card, the Transportation Worker Identification Credential (TWIC), which Jackson said will be required soon. “We will not move rashly,” he promised. “It won’t be a federal ‘cramdown.’ It needs cooperation.” DHS is considering distributing TWIC through Union Halls. “If it’s not working right, come tell us,” he invited.

Multi-Layered Cooperation. Panelists represented the private sector, the Coast Guard, FBI, Transportation Security Administration and Customs & Border Protection.

Ethel L. McGuire, Asst. Special Agent in Charge for the FBI in Los Angeles, said her agency receives 200-300 threats per month. “The community is our eyes and ears,” she noted. The FBI has also added 56 maritime security agents since the 9/11 terrorist attacks. The FBI investigates every credible threat, relying on different teams, including their maritime liaisons.

“Cooperation is the key to security,” stressed Capt. Paul E. Wiedenhoeft, Captain of the Port, U.S. Coast Guard. “The FBI has become a good partner,” he said. Locally, he relies on the Area Maritime Security Committee, under his command, for cooperative terrorist responses. “We have come a long way in coordination and sharing.” He reminded the audience that “We need the vigilance of everyone out there.”

Todd A. Hoffman, Port Director, Los Angeles/Long Beach Seaport, CBP, noted that today his agency receives advance information on all containers inbound for the U.S. A pilot program calls for inspections abroad prior to containers leaving the docks. It is “very delicate,” said Hoffman, due to sovereignty issues.

“We all have a responsibility to help protect this country,” said Ken Konigsmark, Senior Manager, Supply Chain Security for The Boeing Co. “When you’re a Boeing employee, you take it personally when your product is used for terrorism,” he recalled ruefully. Boeing has added an entire department to address supply chain security since 9/11. In addition, he said, Boeing now requires suppliers to build in security to all their processes.

John E. Schwartz, Asst. Director for TWIC at the Transportation Security Administration (TSA), noted that TSA has been working with industry and “we have learned a lot” about how TWIC should work. He promised a TWIC enrollment soon. With 100 distribution sites, Lockheed Martin will implement the rollout.

Schwartz said he views TWIC as a partnership including frontline workers. TSA is establishing an industry advisory commission to assure the success its success.
You might suspect a film alumnus could win an Emmy, but a USC Public Administration graduate with a CSULB Engineering degree?

Ken Husting, 2005 USC Master of Public Administration graduate, is the unlikely recipient of the highest honor from the Academy of Television Arts and Sciences. As executive producer of a Public Service Announcement (PSA), “Laws of Physics,” Husting headed a team from the Los Angeles Department of Transportation (LADOT) for its “Watch The Road” campaign.

The tongue-in-cheek PSA depicts the inevitable outcome of a bicycle rider colliding with a moving car. A white-coated scientist shows the gruesome result. View the PSA at: www.lacity.org/ita/emmy.

Academic Studies. Husting is no stranger to accolades, having been named Town and Gown Scholar and Eno Fellow at USC. The Enon Transportation Foundation brings top transportation graduate students to Washington, D.C., to observe how national transportation policies are made.

He worked fulltime at LADOT while completing his Graduate Certificate in Public Management and MPA at USC.

How Do You Follow An Emmy?

Husting is as surprised as anyone with the award, but he admits it inspired him. “Now, I need to go for an Oscar,” he jokes. “But I need the most obscure category of the Academy; I wonder what that is?”

If the Academy of Motion Picture Arts and Sciences had a category for civil engineering, Husting would probably win that one, too.

Doctoral Student JiYoung Park Named UTC Student of the Year

JiYoung Park, Ph.D. candidate in Urban Planning, received this year’s METRANS University Transportation Center Outstanding Student Award. The award allowed Park to travel to the annual January meetings of the Transportation Research Board in Washington, D.C. He attended the celebratory banquet with similar honorees from other universities.

Park has worked on more than ten research projects and has published five peer-reviewed papers and two econometrics textbooks. He has presented his research at more than ten national conferences.

Shared Credit. Park modestly gives credit for the award first to his USC faculty advisors:

Ken Husting

On the Job. When not making PSAs, Husting serves LADOT as Senior Transportation Engineer.

Peter Gordon, Harry Richardson, and James E. Moore II. “Unless I had met and received their precious and passionate guidance, I could not have overcome many problems during my studying,” he noted.

Next, he commends his previous advisor, Dr. Seong Woo Lee at Seoul National University, for showing how a scholar should study and live. “Above all, however, the power of my lovely wife HyeJin and son Tevin, was most important.”

Introduction to TRB. Park was very impressed with the magnitude of the TRB meetings. He learned about how various subfields in transportation relate. Perhaps most importantly, he picked up some research ideas applicable to Southern California and the United States as a whole.

“All showed passionate presentations,” he noted about his fellow researchers. “I felt we all are not competitors, but cooperators.”

Career Plans. Next fall, Park expects to start work at the Center for Risk and Economic Analysis of Terrorism Events (CREATE) at USC as a postdoctoral research associate.

Having worked on METRANS-funded projects establishing a method to estimate trade flows by commodity between states, Park followed up with helping to construct the National Interstate Economic Model, “a spatially disaggregated operational multi-regional input-output model of the 50 states and the District of Columbia.”

What’s Next. With a second baby on the way and a new job waiting, Park expects 2007 to be an exciting year.
as local constituents.

**Missing: Network Advantages.**

What is missing from this approach, said Giuliano, is the network advantages that transportation so badly needs. “Decentralized and fragmented decision-making,” she emphasized, “gives veto power to local interest groups, no matter how large net benefits might be.”

Such a fragmented process is often exacerbated by the proliferation of Congressional earmarks, which fund local projects without regard for cooperation and national priorities.

“Incentives for cooperation in transportation are needed,” Giuliano continued.

**National Mission.** As local infrastructure deteriorates, she continued, there is reduced commitment to a national approach to transportation. In general, she feels there is a lack of recognition of network benefits and our national leadership has not stepped into the breach with a new national mission for transportation.

As pressures mount for inefficient decisions, the “collective action” problem is harder to solve, she notes. Side effects of these forces include delays and added costs even for the most worthy projects and frustratingly complex management structures from fragmented governance.

**New Landscape Example: The Alameda Corridor.** The 20-mile Alameda Corridor, linking the ports of Long Beach and Los Angeles to downtown Los Angeles by rail, is a “bright side” example Giuliano used to demonstrate the new landscape for transportation decision-making. It runs through the heart of a highly dense urban area, through more than 20 different jurisdictions. Yet most outcomes for the project have been even better than expected—especially that construction was completed on time and on budget.

Giuliano noted that the positive results can be explained by several factors, chief among them strong, experienced leadership and collaboration by public agencies who recognized the Corridor’s regional and international importance.

**Improvement.** In conclusion, Giuliano offered ideas for improving transportation decision-making. Capping the list is to provide incentives for cooperation, so that funding would be conditional on cooperation—for example, by matching funds on that basis.

She said it is important to align decision-making and fiscal responsibility, making both consistent with the extent of the benefit, so that regional responsibility is allocated for regional problems and national responsibility for national problems.

**Implications.** Giuliano called upon her colleagues for the following:

- Research to better our understanding of the new transportation decision-making environment and its effects;
- Professional training that is more interdisciplinary, emphasizing consensus building, collaboration, partnerships and leadership;
- Leadership making the case for transportation systems to a fragmented public.

**Genevieve Giuliano has been active in the Transportation Research Board (TRB) since the early 1990s. She served on five specially appointed National Research Council policy study committees. Appointed to the Transportation Research Board Executive Committee in 2000, she served as Vice Chair in 2002 and Chair in 2003. Currently, Giuliano is Chair of the Subcommittee on Planning and Policy Review, and she played a major role in both drafting and revising the most recent edition of Critical Issues in Transportation.**

TRB previously honored Giuliano with the W. N. Carey, Jr., Distinguished Service Award (2005).

The TRB was organized in 1920 as a division of the National Academies (including the National Academy of Sciences), as a national resource for objective policy advice.

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### NEWLY COMPLETED RESEARCH PROJECTS, cont.

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<td><strong>Survey and Identify the Needs of Communication Equipment for Safety, Security and Interoperability</strong>&lt;br&gt;Principal Investigator: Henry Yeh</td>
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<td>05-10</td>
<td><strong>Improving Trucking Safety: Effects of Hours of Service Regulations</strong>&lt;br&gt;Principal Investigator: Randolph W. Hall</td>
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METRANS Faculty
METRANS has funded 60 faculty at USC and CSULB who are now members of the METRANS Center. Consistent with METRANS' interdisciplinary theme, they come from six branches of engineering (aerospace, civil, computer, electrical, mechanical and industrial & systems), as well as business, economics, geography, information sciences, public policy, planning and public administration. These faculty serve as principal investigators on METRANS-funded projects. They also come together periodically to share insights at coordination meetings and conferences.

California State University, Long Beach:
Anastasios Chassiakos  Electrical Engineering
Robert Chi  Information Systems
Burkhard Englert  Computer Eng. & Computer Science
Mohammed Forouzesh  Health Sciences
Robert Fries  Health Sciences
Darin Goldstein  Computer Engineering
Lisa Grobar  Economics
Karl H. Grote  Mechanical, Aerospace Engineering
Ken James  Electrical Engineering
Christine Jocoy  Geography
Tim Jordanides  Information Systems
Melody Kiang  Computer Engineering
Shui Lam  Geography
Christopher Lee  Mechanical & Aerospace Engineering
Bei Lu  Economics
Joseph Magaddino  Ctr for Int’l Trade & Transportation
Kristen Monaco  Economics
Tom O’Brien  Civil Engineering
Emily Parentela  Mechanical Engineering
Antonella Scioritno  Civil Engineering
Tariq Shehab  Economics
Seiji Steimetz  Mechanical & Aerospace Eng
Reza Toossi  Mechanical Engineering
Jalal Torabzadeh  Geography
Suzanne Wechsler  Mechanical & Aerospace Engineering
Henry Yeh  Electrical Engineering
Hsien-Yang Yeh  Mechanical & Aerospace Engineering

University of Southern California:
Tridib Banerjee  Policy, Planning & Development
Satish Bukkapatnam  Industrial & Systems Engineering
Maged Dessouky  Business Administration
Michael Driver  Policy, Planning & Development
Genevieve Giuliano  Physics & Astronomy
Martin Gunderson  Policy, Planning & Development
Peter Gordon  Civil Engineering
Randolph Hall  Industrial & Systems Engineering
John Heideman  Information Sciences Institute
Petros Ioannou  Electrical Engineering Systems
Erik Johnson  Policy, Planning & Development
Behrokh Khoshnevis  Civil Engineering
John Kuprenas  Civil Engineering
Naj Meshkati  ISE, CE and PPD
James E. Moore II  Policy, Planning & Development
Dowell Myers  Industrial & Systems Engineering
Fernando Ordonez  Industrial & Systems Engineering
Kurt Palmer  Electrical Engineering Systems
Alice Parker  Policy, Planning & Development
Mansour Rahimi  Industrial & Systems Engineering
Christian Redfearn  Mechanical Engineering
Harry Richardson  Political Science
Paul Ronney  Civil Engineering
Jefferey Sellers  Industrial & Systems Engineering
Maria I. Todorovska  Civil Engineering
Mihailo D. Trifunac  Policy, Planning & Development
Niraj Verma  Mechanical Engineering
Chris Williamson  Geography
Hung Leung Wong  Civil Engineering
Maria Yang  Industrial & Systems Engineering

METRANS Website
Information on transportation research, publications, education, training & technology transfer can be found at the METRANS website: www.METRANS.org. The site also lists faculty, news, links to other relevant sites, and information on USC & CSULB transportation education programs.
Dear Reader:

The fall semester was a time of transition. Vicki Valentine, our new METRANS Administrator, started her job with stacks of files needing attention, an Annual Report needing completion, a monthly seminar series to be arranged, and 17 new research projects to be set up. I am pleased to report that Vicki has done a great job, and our operations are now once again running smoothly.

Our spring semester is quite busy. The deadline for our applied research program proposals has just passed, and awards will be made soon. Our CITT Town Hall took place on February 7, and we have begun planning for the second annual National Urban Freight Conference, to be held in December. Our major task in the coming months is to write our new Strategic Plan. It will guide our activities for the next four years. Our reconstituted Advisory Board will meet in March to assist us in this task.

Finally, congratulations are in order for METRANS Executive Committee member Michael Mahoney, Dean of the CSULB College of Engineering. He has been appointed Provost and Vice President of Academic Affairs of Cal State, East Bay. We will miss his thoughtful and enthusiastic support.

Genevieve Giuliano
Director, METRANS Transportation Center