



**METRANS CENTER
SEMI-ANNUAL REPORT**

**University of Southern California
California State University, Long Beach**

2002-2003 FISCAL YEAR

January 31, 2003

INTRODUCTION

The 2002 calendar year was unusual, so we begin this Semi-Annual Report with some explanation in order to place our activities in context. METRANS was one of the 17 University Transportation Centers that were required to compete for the last two years of funding under TEA-21. The results of the competition were announced at the end of May 2002, after both USC and CSULB had completed the academic year. For METRANS, winning the competition meant an approximate doubling of funding and commensurate expansion of all METRANS activities, while losing the competition meant either closing or greatly reducing center activities. Consequently no new tasks were undertaken during the last half of the calendar year. Once the results were announced, we quickly developed a budget and list of tasks and activities for the 2002-2003 year. However, our research program and outreach activities were unavoidably delayed, and the past six months have been devoted to launching the current year's programs as quickly as possible.

The labor contract negotiations and eventual shutdown of the west coast ports also affected METRANS. Several members of the METRANS Advisory Council were involved in negotiations, port operations, or shipping operations. These people play a key role in our workshops, town halls, and other industry activities. The entire goods movement industry was significantly affected by the shutdown. Labor – management relations were extremely precarious. In view of these sensitive conditions, METRANS postponed events scheduled for June and November to spring and summer 2003.

METRANS has made significant progress in research, information dissemination, and education in the first half of the fiscal year, despite these challenges. As always, METRANS continues to expand activities, increase its visibility, and fulfill its three-part mission of research, education, and information dissemination.

A. Success Stories:

Conference: “National Symposium on Transportation, International Trade, and Economic Competitiveness”

October 25, 2003, Long Beach, CA.

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METRANS joined the American Association of State Highway and Transportation Officials (AASHTO) in organizing this one-day conference. The conference was funded by the National Cooperative Highway Research Program (NCHRP). It is one of four conferences being held around the US to highlight various aspects of the US transportation system and the significance of transportation in the national economy.

Restructuring of the world economy and increasing globalization has fueled rapid growth in international trade. In 2000, the combined value of all U.S. imports and exports was close to \$2,500 billion. Estimates place international trade at 27% of the U.S. GNP. Even conservative forecasts indicate continued significant increases in international trade.

The purpose of the conference was to explore the relationship between transportation and international trade. The conference included the following topics:

- Description of the scope and impact of trade on the national economy
- Description of the state of the national goods movement transport system and projections for future goods movement demand
- Discussion of major problems associated with the goods movement transport system
- Reflections on problems from various stakeholder perspectives
- Suggestions for solving these problems

Conference presenters included academics, industry representatives (port authorities, trucking, rail terminal operator, labor), public agency representatives (federal, state, local), and elected officials (federal and state). Conference attendees included faculty and graduate students as well as a wide range of industry stakeholders, both public and private.

Conference presenters argued that the existing port and highway capacity is insufficient to meet present and future demands of intermodal goods movement. Large ports are nearly built out and have little or no land for further expansion. The national stock of transportation infrastructure (highways and railroads) is aging and requires significant capital investment for its maintenance, repair and construction of any additional capacity. The shortfall in funding to maintain and expand transportation infrastructure was a big

concern at the conference. It was observed that the demands for homeland security make public funding more difficult for infrastructure improvement projects.

The major problem areas discussed included congestion and reliability, financing and pricing, safety and security, and the lack of adequate data and modeling capability to monitor and forecast freight flows. Industry stakeholders also identified the impacts of goods movement on local populations and the environment, as well as the absence of a comprehensive “supply chain” perspective as significant problems.

The Conference Proceedings are currently being written, and will be submitted to NCHRP for review by the end of January 2003. The Proceedings summarize the speaker presentations and panel discussions from the conference. The Proceedings will be distributed by NCHRP and AASHTO, and will be placed on the METRANS website.

Industry Stakeholder Workshops

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As an outcome of the Annual Town Hall meetings and the growing realization that solutions must be found to address rising congestion problems and increasing public resistance to growth in containerized goods movement, METRANS conducted a series of three workshops. The first workshop was held in May 2001 and its purpose was to lay out the possible implications of extending the hours of operation of ocean terminals in order to improve port and supply chain operations efficiency. The result of the workshop has been summarized and distributed to stakeholders in the form of a white paper. The second workshop was held in November 2001 CITT and its purpose was to obtain feedback and evaluation from the participating stakeholders on implications (impacts, cost, benefits, tradeoffs) resulting from introducing and deploying several generic information technologies (IT) on marine terminal. The results of this workshop have been summarized in a report and posted on the METRANS website.

The third industry stakeholder workshop, titled "Equipment management in a changing environment and its impact on efficiency, safety and security in the supply chain" was originally scheduled for late June , 2002. The objective of the workshop was to evaluate models to optimize off-terminal equipment management as it relates to safety and security implications. This event was canceled due to the longshore labor contract negotiations and eventual ten-days shutdown of the west coast ports. Key workshop participants were involved and impacted by the negotiations and the port shutdown. Additionally, because of the sensitive conditions, stakeholders were reluctant to engage in any kind of vigorous discussions of port issues. In essence, everyone involved in port operations, both employers and labor went onto a lock-down mode and therefore, METRANS postponed events scheduled for the rest of the year to spring and summer 2003.

Planning for a Goods Movement Summit

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METRANS is planning a Goods Movement Summit that will bring together key industry decision-makers, who will focus upon alternative visions for technological or process-oriented solutions for improving efficiency in the movement of goods from marine terminals and alleviating adverse impacts on local communities.

To ensure that the Summit will be a useful and informed event, we will stage a pre-summit workshop that will bring together industry stakeholders to reevaluate the products of the previous workshops and address specific uncertainties in the new environment. The goal is to endorse a Summit agenda outline and to identify appropriate industry leaders to participate in the Summit.

The region and the industry are deeply divided on how growth can be absorbed over the next several years. The Annual State of the Trade and Transportation Industry Town Hall Meetings and workshops sponsored by METRANS over the past four years, have addressed the importance of increasing productivity and garnered a number of proposals for reducing the external negative impacts of trade from the stakeholder. Specific action and policy changes will be identified in the pre-summit workshop for in depth analysis and for further discussion at the summit in order to move toward recommending strategies that are most promising for increasing supply chain productivity allowing trade to grow, leveraging existing and future infrastructure, and minimizing the negative environmental impact resulting from port related distribution (decreasing diesel pollution and unnecessary truck traffic on freeway and arterial streets).

Planning for 5th Annual CITT Sate of the Trade and Transportation Industry Town Hall Meeting (March 26 2003)

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We have traditionally used the Town Hall meetings to discuss topics directly related to the day-to-day operation of the ports, since the primary audience is longshore labor. For this Town Hall, we have selected a topic that places port operations in the larger context of the regional transportation system. The objective is for goods movement stakeholders to gain a better understanding of the role of the transportation system, and how expected increases in port activities impact that system. Current transportation plans show significant shortfalls in system capacity; the Town Hall will discuss the extent of infrastructure shortfalls and some possible alternatives for bridging the infrastructure gap.

The 5th Annual Town Hall meeting is titled, "What's In It For Me? Collaborative Strategies for New Transportation Infrastructure California". It will be held on March 26, 2003 at the CSULB campus and webcast and archived for one year at the University website.

As the previous Town Hall meetings, the event is staged under the motto, "Global connectivity and collective responsibility for future growth, economic well-being and job security in the Ports of Los Angeles and Long Beach". We expect to attract more than 1200 industry stakeholders, including numerous rank and file longshore labor attendees. The event will be endorsed by more then 25 trade associations and public organization.

Planning for a Global Logistics Specialist on-line

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To meet the ever increasing demand for a well-trained workforce pool nation wide, METRANS plans to convert the highly successful Global Logistics Specialist Professional Designation Program (GLS®) offered through the Center for International Trade and Transportation (CITT) at the California State University, Long Beach into an on-line, web-based version.

In five years, this rigorous, 118 hour program—taught by top practitioners from every facet of the industry—has trained over 600 students, and awarded the professional designation to more than 300 individuals in this group.

Facing unprecedented demand and nationwide interest, the CITT has been unable to expand the complex program beyond its home region. Scores of inquiring, prospective students have contacted CITT requesting the program to be offered in a format that would allow them to enroll, without having to spend weeks in Southern California. An on-line conversion will allow us to offer the GLS throughout California and the United States.

The planning process will begin with pulling information from class comments on course evaluation forms to determine what students identified as most important. There will be focused interviews with former graduates, instructors, and various employers and sector representatives to determine what the ideal learning package might look like. Alternative educational approaches will be evaluated. There will be some targeted testing of one module that has been already developed with a small group.

CSULB Integrated Distance Education for Adult Students (IDEAS) division has offered distance learning opportunities for sixteen years. The IDEAS staff includes instructional design professionals, programmers, graphic artists, student service specialists, and technicians and is well qualified to take on the GLS online project. We will also contract with the CSULB-based Center for Usability and Design Assessment (CUDA), for independent evaluation of student needs and the usability of a prototype version.

Course instructors and subject matter experts will be the same highly-qualified individuals who have offered the traditional GLS program. They will work with online course developers. There will also be support from all other internal technology staff for Flash animation creation, video, programming and other tasks. Technical support will be offered through existing CSULB channels, including telephone and e-mail.

We have decided on an incremental approach based on the GLS® modules and expect to have the first module ready to go in fall 2003. The project will be utilizing powerful and accessible live (“synchronous”) delivery technology, as well as asynchronous elements in the Blackboard Learning Management System.

“Building Bridges” Newsletter

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The *Building Bridges* newsletter, published bi-monthly, is distributed to the ILWU membership and broader maritime/ logistics community. It began publication in January 2001. The newsletter is a briefing document intended to inform and promote dialogue

within the maritime/logistics industry community. 4000 copies of each issue are distributed to ILWU local members, industry leaders, and METRANS Advisory Board Members. In addition, the newsletters are made available at the Town Hall meetings, at trade association meetings, and via the METRANS and CITT websites.

The objectives of *Building Bridges* are:

- To provide a neutral communications channel on industry issues
- To lead to fruitful and open dialogue
- To encourage closer cooperation among all industry stakeholders

The newsletter is formulated, edited and distributed by an Editor-in-chief selected by the CITT Engagement Subcommittee. An Editorial Board including members of the subcommittee, and the METRANS Director provides oversight. Issues of *Building Bridges* were published in August and November 2002

“METRANS NEWS” Newsletter

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Planning has begun for the *METRANS NEWS*, a newsletter that will summarize METRANS research, education and information dissemination activities. The newsletter will compliment the METRANS website and broaden our exposure to the research community, government, and industry. The newsletter will feature METRANS researchers, conferences and other events, recent publications, and other newsworthy activities and events. The first issue is expected to be published in March 2003, with a quarterly publication schedule. The newsletter will be distributed to the national research community, federal, state and local leaders, industry leaders, and federal, state and local transportation agencies. The newsletter will also be posted on the METRANS website.

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The following reflects the additions and updates for METRANS websites from July 2002 through December 2002.

Items Added

- A) Final Report 00-5, Developing Risk Model for Commercial Goods Transport .
- B) Final Report 00-6, Assessment of Hybrid Vehicle Control Strategies
- C) Final Report 99-14, 2D Virtual and Physical Simulation
- D) Final Report 00-17, An Integrated Approach to Managing Local Container Traffic Growth
- E) Final Report 00-3, Alternative Access and Locations for Air Cargo
- F) Final Report 00-15, Dynamic Optimization of Cargo Movement by Trucks in Metropolitan
- G) Final Report 00-12, Freeway Bus Station Area Development: Evaluation and Design
- H) METRANS 2002 Request for Proposal and Addendum
- I) METRANS Final Annual Report
- J) National Symposium on Transportation (AASHTO) Conference information and agenda
- K) AASHTO conference registration form, biographies of conference speakers, and PowerPoint presentations of conference

Items Updated

- L) AASHTO conference with newest information and agenda
- M) Link for the Caltrans New Technology Research Manual
- N) Link for METRANS Publications Style Guide

UTC Search Engine

- O) Update Page count / websites on a monthly basis
- P) Reindex UTC web sites to add new pages on a monthly basis
- Q) Corrected links for UTC web sites
- R) Problem solved sites with low page counts
- S) Raise page count for sites with large page counts

As of December 2002, METRANS.ORG had about 25,000 hits on the home page.

METRANS Advisory Committee

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The METRANS Advisory Committee is made up of private industry leaders and federal, state and local public agency representatives. The purpose of the Committee is to provide general policy guidance on METRANS activities. The Advisory Committee meeting planned for Spring 2002 did not take place, since the results of the competition were not announced until late May, after both USC and CSULB had ended the academic year. On September 18, 2003, METRANS held both an Advisory Committee meeting and a reception celebrating the renewal of METRANS for two more years.

The Advisory Committee meeting was attended by 14 members (several members were involved in port negotiations and therefore were not able to attend). The meeting was devoted to updating the Committee on the renewal of METRANS, the increase in funding, and the expanded set of activities for the coming years. The Committee was enthusiastic about the expansion of our research program and requested more frequent information on research accomplishments. Development of an on-line version of the Global Logistics Specialist was strongly endorsed. Overall, the Committee was greatly pleased with the direction and progress of METRANS.

The reception celebrated the success of METRANS and its new home in the School of Policy, Planning and Development (SPPD). Attendees included USC and CSULB Deans and Administration, federal, state and local agency representatives, industry representatives, faculty, and graduate students.

Briefing: California Secretary of Business, Transportation and Housing

August 23, 2003

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The California Governor's office has identified goods movement and international trade as a top priority issue. The Secretary of Business, Housing and Transportation, Maria Contreras-Sweet, visited USC with her staff for a briefing on METRANS research, education and outreach activities, and for an informal discussion of goods movement issues with industry stakeholders. Members of the METRANS Advisory Board, the METRANS Executive Committee, Caltrans representatives, and key interested USC and CSULB faculty participated in a round table discussion to identify research needs for California.

The meeting was followed up with discussions and drafts of research problems and strategies for serving California's short-term and long-term needs. Ultimately, a short list of research topics was added to the METRANS research RFP, as described in the following section.

Research

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By the end of the 2001-2002 Fiscal Year, METRANS had issued three research RFPs, and had funded a total of 31 research projects. As of July 1, 2002, 16 projects were completed (final reports approved and published), 6 projects had draft final reports submitted and under review, 9 projects were in progress. By December 31, 2002, an additional 2 projects were completed, 7 draft reports were under review or revision, 6 projects were in progress. No new projects were awarded in 2002 due to funding uncertainty.

The RFP for FY 2002-2003 was issued August 16, 2002. The increased funding level of METRANS made it possible to allocate up to \$1 million for research projects. In response to the State of California's research priorities in goods movement, a RFP addendum was issued September 10, 2002. Proposals were due October 15, 2002. METRANS received 29 proposals from 40 faculty representing 13 departments, requesting a total of \$2.7 million. Proposals were reviewed by academics, practitioners, and government agency representatives. The METRANS Executive Committee met in January 2003 to evaluate and prioritize proposals. It is anticipated that final awards will be made in February.

Results from individual research projects for which draft final reports were submitted during the first half of this fiscal year are highlighted below.

00-12 Freeway Bus Station Area Development: Critical Evaluation and Design Guidelines

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The proposal is to explore design improvements necessary in freeway transit centers (freeway bus stops, stations or transfer centers) to encourage higher level of transit ridership for the local communities. Six freeway transit centers operating along Harbor Freeway (I-110) and two more under construction will form the basis of research for this proposal.

The central idea behind this proposal is to examine how freeway transit centers can become more than just a place for transportation; but also become a setting for community destination and a place that accommodates a diversity of activities, and thus promotes transit ridership.

00-13 Distributed Architecture for Real-Time Coordination in Transit Networks

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With increasing emphasis on mass transit, the current bus systems are finding ways to increase their resource utilization and minimize passenger waiting times through coordination of bus dispatches and holding times at various stations on a transit network. The earlier research of Co-PI (Dessouky et al., 1999) has established that dynamic coordination of dispatching and holding operations can reduce waiting times without much additional resources. Dynamic coordination through multiagent systems will enable the station controllers in a transit loop to make critical decisions on dispatching and holding times near-optimally on a real-time basis, considering various factors such as the magnitude of delay, number of actual and anticipated arrivals of passengers, and the frequency of bus service.

01-5 Reengineering the Logistics of Empty Cargo Containers in the SCAG Region

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This project describes existing logistics practices with respect to empty containers, and considers the economic and institutional circumstances that direct the movement of empty containers within the SCAG region. Building on findings and recommendations presented in the recently concluded Gateway Cities Study [1], this work explores the regional problems posed by empty containers in the context of existing international trading structures and through discussions with international marine carriers.

A key objective of this project is to understand the current logistics of empty containers related to the movement of cargo through the ports of Los Angeles and Long Beach. This project will investigate two aspects of the existing logistics system for handling empty containers: (1) the physical movement of empty containers, and (2) institutional arrangements and practices. In order of emphasis, however, the second aspect of this investigation will be the main focus of discussion. Accordingly, this investigation will assess the extent to which current global logistics practices constitute a barrier to rationalizing empty container movements within the study region.

It is envisioned that an appreciation of the overarching structure of international trade, and of how the market for global logistics values the efficient movement of empty containers, will provide an important frame of reference for this study. Without an understanding of this context and competitive environment, all efforts designed to rationalize empty container movements at a regional level may prove to be rather limited in their implementation.

The methodology of this study includes field surveys and interviews with local and international carriers, container leasing firms, trucking companies, intermodal transport operators, freight forwarders, and marine container logistics specialists. Findings of this research suggest that, although these operators are cognizant of the efficiencies that could be gained through a rationalization of empty container movements, the business opportunity costs associated with an inadequate supply of empty containers for customers in Asia far outweighs the likely gains of rationalized empty container movements in the SCAG region. Essentially, this study finds that carriers are willing to tolerate the regional inefficient movement of empty containers and bear repositioning costs as necessary conditions for optimizing the overall performance of their global container inventory and control operations.

Analysis continues with a consideration of the global logistics system as a whole, with regional markets such as that represented by the SCAG region comprising logistical subsystems. This analysis leads to the conclusion that optimal solutions to the rationalization of empty container movements must consider all scales of the global logistics system, and that such solutions would work to better performance at different levels of the system as well as for the overall system. Possible strategies for optimizing empty container logistics at the international and regional scale indicate clear opportunities do exist for reducing the total number of empty container trips. However, in certain (market) situations, strategies intended to optimize performance at the regional scale would work to degrade the system at the international level. This study suggests that the better solutions for rationalizing empty container movements would contribute positively to the performance of global logistics in total, and that strategies failing this test would not generate sufficient benefits to justify the cost of their implementation.

01-6 A Methodology for Joint Optimization of Service and Life-Cycle Environmental Impact Assessment of Transportation Systems

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Transportation is essential to the U.S. economy and social well being. We now know that the environmental impacts and consequences of transportation are quite significant and extend far beyond tail-pipe emissions of criteria pollutants. These impacts cannot be mitigated solely through solutions such as use of “cleaner” fuels. To fully assess the environmental consequences of transportation, use of life-cycle methods is required, and is recommended by USEPA. More importantly, once these life-cycle impacts have been identified, they can also be included in the transportation system optimality criteria (i.e., objective function). To facilitate this development, numerous methodological and practical issues need to be addressed in a rigorous manner. These include disparities in environmental data quality and availability, and structuring and prioritization of objectives. We have found no currently efficient approaches to assess the environmental impacts of transit systems on a life-cycle basis. This project will develop and demonstrate such a methodological approach. We are happy to mention that the core ideas behind this proposal are being supported by California Air Resources Board, where a number of vehicle emission models are currently being used for transportation planning (see the appendix letter from Lynn Terry, Deputy Executive Officer), and MTA (see the appendix letter from Dr. Jimmy Chen, Senior Project Manager IV).

A. Project Status:

Completed

- Project Number:** 99-3
Research Project: A Task Decomposition Model for Dispatchers in Dynamic Scheduling of Demand Responsive Transit Systems
Principal Investigators: Mansour Rahimi
Department of Industrial and Systems Engineering
University of Southern California
Maged Dessouky
Department of Industrial and Systems Engineering
University of Southern California
- Project Number:** 99-5
Research Project: Improving fuel economy and emissions performance of commercial goods transportation and mass transit vehicles using throttleless engines
Principal Investigators: Paul D. Ronney
Aerospace and Mechanical Engineering
University of Southern California
- Project Number:** 99-7
Research Project: Modeling and Route Guidance of Trucks in Metropolitan Areas
Principal Investigators: Petros Ioannou
Electrical Engineering Systems
University of Southern California
Anastasios Chassiakos
College of Engineering
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- Project Number:** 99-10
Research Project: Implementing a Statewide Goods Movement Strategy and Performance Measurement of Goods Movement in California
Principal Investigators: Daniel Barber
Graduate Center for Public Policy Administration
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Lisa Grobar
Department of Economics
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Project Number: 99-11
Research Project: The Role of Public Transit in the Mobility of Low Income Households
Principal Investigator: Genevieve Giuliano
School of Policy, Planning, and Development
University of Southern California

Project Number: 99-14
Research Project: 3D Virtual and Physical Simulation of Automated Container Terminal and Analysis of Impact on In Land Transportation
Principal Investigator: Behrokh Khoshnevis
Industrial and Systems Engineering
University of Southern California

Project Number: 99-18
Research Project: Identification and Analysis of Local Agency Transit Project Performance Criteria (Research Initiation Grant)
Principal Investigator: John A. Kuprenas
Department of Civil Engineering
University of Southern California

Project Number: 00-19
Research Project: Solid State Sorption Air Conditioner System for Containerships and Vehicles—Phase I
Principal Investigators: Reza Toossi
College of Engineering
California State University, Long Beach

Project Number: 99-22
Research Project: Highway Oriented Transit System: A Comprehensive Land Use/Transportation Strategy to Improve Transit Service Delivery
Principal Investigator: Tridib Banerjee
School of Policy, Planning, and Development
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Project Number: 99-23
Research Project: Non-invasive Means of Investigating Container Contents for Customs Agents at Port
Principal Investigator: K. A. James
Electrical Engineering Department
California State University, Long Beach

Project Number: 99-25
Research Project: Assembling and Processing Freight Shipment Data: Developing a GIS-Based Origin-Destination Matrix for Southern California Freight Flows
Principal Investigator: Peter Gordon
 School of Policy, Planning, and Development
 Department of Economics
 University of Southern California

Project Number: 99-27
Research Project: Dynamic Coordination Framework for Resource Allocation in Trucking Operations
Principal Investigator: Satish Bukkapatnam
 Industrial and Systems Engineering
 University of Southern California

Project Number: 00-3
Research Project: Alternative Access and Locations for Air Cargo
Principal Investigator: Randolph W. Hall
 Industrial and Systems Engineering
 University of Southern California

Project Number: 00-5
Research Project: Risk Modeling for Commercial Goods Transport
Principal Investigator: Emelinda M. Parentela
 Department of Civil Engineering
 California State University, Long Beach

Project Number: 00-6
Research Project: Assessment of Hybrid Configuration and Control Strategies in Planning Future Metropolitan/Urban Transit Systems
Principal Investigator: Reza Toossi
 Mechanical Engineering Department
 California State University, Long Beach

Project Number: 00-15
Research Project: Dynamic Optimization of Cargo Movement by Trucks in Metropolitan Areas with Adjacent Ports
Principal Investigators: Petros Ioannou and Anastasios Chassiakos
 Departments of Electrical Engineering
 University of Southern California and
 California State University, Long Beach

Project Number: 00-16
Research Project: Design and Optimization of a Conceptual Automated Yard Using Overhead Grill Rail System
Principal Investigators: Elias Kosmatopoulos
 Department of Electrical Engineering
 University of Southern California

Project Number: 00-17
Research Project: An Integrated Approach to Managing Local Container Traffic Growth in the Long Beach/Los Angeles Port Complex Phase II
Principal Investigators: Lisa Grobar and Daniel Barber
Departments of Economics and Public Administration
California State University, Long Beach

Ongoing

Draft Report in Final Revision (Review Complete)

Project Number: 00-8
Research Project: Travel Patterns of the Elderly
Principal Investigators: Genevieve Giulano
School and Policy, Planning and Development
University of Southern California

Project Number: 01-5
Research Project: The Logistics of Empty Cargo Containers in the Southern California Region: Are Current International Logistics Practices a Barrier to Rationalizing the Regional Movement of Empty Containers
Principal Investigators: Le Dam Hanh
Department of Civil and Environmental Engineering
University of Southern California

Draft Report Received (Under Review)

Project Number: 00-7
Research Project: Solid State Sorption Air Conditioner System for Containerships and Vehicles—Phase II
Principal Investigators: Reza Toossi
College of Engineering
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Project Number: 99-20
Research Project: Use of Robotics and Expert Systems in Improving the Handling of Containers at the Port Terminals
Principal Investigators: Timoth Jordanides
Electrical Engineering Department
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Project Number: 00-12
Research Project: Freeway Bus Station Development: Critical Evaluation and Design Guidelines
Principal Investigators: Tridib Banerjee
Policy, Planning and Development
University of Southern California

Project Number: 00-13
Research Project: Distributed Architecture for Real-time Coordination in Transit Networks
Principal Investigators: Satish Bukkapatnam and Maged Dessouky
Industrial and Systems Engineering
University of Southern California

Project Number: 01-6
Research Project: Green Transit Scheduler: A Methodology for Jointly Optimizing Cost, Service, and Environmental Performance in Demand-Responsive Transit Scheduling
Principal Investigators: Mansour Rahimi
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Projects In Progress

Project Number: 00-11
Research Project: Investigating the Role of Driver Decisions and Styles In Highway-Rail Crossing Accidents
Principal Investigators: Naj Meshkati, Mansour Rahimi & Michael Driver
School of Engineering and School of Business
University of Southern California

Project Number: 01-2
Research Project: Reducing Pollutants from Mobil Sources
Principal Investigators: Hamid R. Rahai
Mechanical Engineering Department
California State University, Long Beach

Project Number: 01-3
Research Project: Analysis of Vibrations and Infrastructure Deterioration Caused by High-Speed Rail Transit
Principal Investigators: Hung Leung Wong
Department of Civil Engineering
University of Southern California

Project Number: 01-10
Research Project: Smart Damping Devices for Monitoring the Health of Bridge Structures
Principal Investigators: Erik A. Johnson
Department of Civil and Environmental Engineering
University of Southern California

Project Number: 01-14
Research Project: Developing and Testing Methodologies for the Evaluation of Highway Widening Plans to Facilitate Freight Flows Throughout a Major Metropolitan Area
Principal Investigators: Peter Gordon
School of Policy, Planning, and Development
University of Southern California

Project Number: 01-16
Research Project: Automated Trucks on Dedicated Lanes for Cargo Movement
Principal Investigators: Petros Ioannou
Department of Electrical Engineering – Systems
University of Southern California
Anastasios Chassiakos
Department of Electrical Engineering
California State University, Long Beach

B. Financial Status:

Fiscal reporting for years 2001-2 and 2002-3 are provided in Tables 1 and 2. All prior year's funding has been fully committed. Funds for 2001-2 are 88% committed. Commitment of remaining funds will take place as additional technology transfer activities are approved.

Funds for 2002-3 have been committed for core administration, Building Bridges newsletter and website maintenance. Specific technology transfer activities (e.g. conferences, workshops) are approved on a case by case basis. The largest portion of non-committed funds (\$1,000,000) is being held for the 2002-3 research projects. Project awards are expected to be made in February 2002.

For the 2001-2 year, expenditures are allocated as follows: research 59%, education 1%, technology transfer 22%, and administration 18%. The increased share of research expenditures reflects the 2001 round of research projects that began 9/1/01. The 2002-3 research share will decline as these projects conclude and the 02-03 projects begin the latter half of the fiscal year. Included in research are student salaries. As noted in previous reports, administrative costs include a portion of technology transfer. These activities will again expand with the launching of the METRANS newsletter and development of GLS-online.

For the past four years, Caltrans has provided dollar-for-dollar matching for all DOT funds. For 2002-3, Caltrans has budgeted more than the 100% match. USC continues to provide matching funds for the Director's salary and associated. In 2002-3 the USC match is \$111,387. Additional donations have been provided to support our outreach activities.

TABLE 1

Actual vs. Budgeted Expenditures: 2001/02 Fiscal Year METRANS Center July 1, 2001 Thru June 30, 2002

	Approved Budget	Committed To Date	Funding Balance
Center Director Salary	20,000	20,000	0
Faculty Salaries	104,164	100,414	3,750
Administrative Staff	119,368	90,681	28,687
Other Staff Salaries	0	0	0
Students Salaries (Subject to Fringe)	101,917	98,917	3,000
Students Salaries (Not Subject to Fringe)	0	0	0
Fringe Benefits	94,373	82,533	11,840
TOTAL SALARIES & BENEFITS	439,822	392,545	47,277
Scholarships	1,000	0	1,000
Permanent Equipment	0	0	0
Expendable Property and Supplies	127,356	100,816	26,540
Domestic Travel	22,483	20,950	1,533
Foreign Travel	0	0	0
Other Direct Costs	10,000	10,000	0
TOTAL DIRECT COSTS	600,661	524,311	76,350
Indirect Costs	316,078	283,913	32,165
TOTAL COSTS	916,739	808,224	108,515
FEDERAL SHARE	435,100	326,585	108,515
MATCHING SHARE	481,638	481,638	0

Match Sources:

USC Match: \$36,260

USC Director Academic Salary: \$10,278 (includes associated fringe and OH)

Caltrans: \$435,100

Other Expected Match Sources Not Included Above

Toyota \$3,000

TABLE 2

Actual vs. Budgeted Expenditures: 2002/03 Fiscal Year METRANS Center July 1, 2002 Thru June 30, 2003

	Approved Budget	Committed To Date	Funding Balance
Center Director Salary	30,717	0	30,717
Associate Director	10,000	0	10,000
Faculty Salaries	173,750	84,731	88,969
Administrative Staff	201,000	27,073	173,927
Students Salaries (Subject to Fringe)	314,400	75,000	239,400
Students Salaries (Not Subject to Fringe)	0	2681	-2681
Fringe Benefits	205,394	41,156	164,238
TOTAL SALARIES & BENEFITS	935,261	230,691	704,570
Scholarships	71,000	0	71,000
Permanent Equipment	0	0	0
Expendable Property and Supplies	223,876	66,882	156,994
Domestic Travel	58,278	15,088	43,190
Foreign Travel	0	0	0
Other Direct Costs	41,800	5,000	36,800
TOTAL DIRECT COSTS	1,330,214	317,661	1,012,554
Indirect Costs	586,086	140,721	445,365
TOTAL COSTS	1,916,300	458,382	1,457,919

FEDERAL SHARE 916,300

MATCHING SHARE 1,000,000

Match Sources:

USC Match: \$79,685

USC Director Academic Salary: \$31,702 (includes associated fringe and OH)

Caltrans: \$1,000,000