

## SEMINAR

Co-Sponsored by the University of California  
Transportation Center (UCTC)

Friday, January 7, 2011  
11:00 am – 12:00 pm

Seminar Room 4080 AIR Building

### THE ZONING PARATRANSIT SYSTEM WITH TRANSFERS: FORMULATION, OPTIMIZATION AND HEURISTIC

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Paratransit services often adopt decentralized zoning strategies to divide large service area into smaller zones assigned to different providers in order to simplify their management. If zones are independently managed, there is no coordination among providers. This causes the overall system to be quite inefficient, due to a large amount of empty trip miles driven, a major cause for these services' high operating costs. Coordination among providers is possible by including transfer points at zone boundaries and can potentially improve productivity. The zoning with transfer practice has been adopted by some transit agencies (Chicago, Boston and San Diego, for example) but never properly investigated from a research point of view. This research study evaluates the impact of transfer design on decentralized zoning paratransit through extensive simulation analyses and related sensitivity analyses to evaluate the interaction among geographic boundaries, size of service area, demand distribution and number of transfer points.

*Dr. Luca Quadrifoglio graduated with the Laurea in Chemical Engineering (1996) from the Giulio Natta Department of Chemistry, Materials & Chemical Engineering at the Politecnico of Milan (Italy). He worked as a Process Engineer and Project Economist for Snamprogetti (ENI Group) in Milan for five years, being primarily responsible for developing large-scale techno-economic feasibility studies as a decision support tool for the firm's executives. He received his M.S. in Engineering Management (2002) and Ph.D. (2005) degrees from the Daniel J. Epstein Department of Industrial and Systems Engineering at the University of Southern California in Los Angeles, California. Then he worked as a Postdoctoral Research Associate at the USC's Department of Homeland Security Center for Risk and Economic Analysis of Terrorism Events (CREATE) until August 2006, when he joined the Faculty of the Zachry Department of Civil Engineering at Texas A&M University in College Station, Texas. Dr. Quadrifoglio published a number of papers in top rated Journals, won the 2006 Pritsker Doctoral Dissertation Award (3<sup>rd</sup> place) and the 2004 Council of University Transportation Center (CUTC) National Student Award for best publication in Science and Technology.*

*His research interests are related to the broad field of Operations Research applied to a variety of fields, primarily Transportation/Logistics, and include Transportation Systems Modeling and Design, Network Optimization, Math Programming, Simulation, Scheduling Algorithms (Vehicle Routing, Pickup and Delivery), Innovative Transit/Logistics Solutions, Performance/Risk/Decision Analysis.*