ANTICIPATED RESEARCH CONTRIBUTIONS

As it shall be seen when describing the analytical formulations and work program, the proposed research spans across a number of different areas. This offers an unique opportunity to produce contributions on a number of different fields and disciplines. Among them, one must highlight: transportation planning, transportation economics, large scale simulation, stochastic optimization. Achieving the long term objectives of the proposed research ultimately will:

- lead to an enhanced understanding of the nature and characteristics of freight transportation demand by considering the flow of both commodities and commercial vehicles;
- improve the assumptions on which the planning of crucial components of the infrastructure of the Nation (e.g., intermodal terminals, highways, ports) is conducted;
- provide the foundation for an effective integration of freight considerations into the transportation planning process;
- provide the tools for the incorporation of freight intermodal planning into the metropolitan planning organization process;
- significantly reduce data collection costs associated with gathering freight demand data;
- benefit other application areas, such as estimation of origin-destination matrices for passenger trips (or vehicle trips), advanced traffic management and the like;
- consider commercial vehicle trip chaining, or alternatively Trip Length Distributions (TLDs);
- use logistic information in freight demand modeling;
- enable the inclusion of freight movements as part of the traffic management process;
- lead to the development of methodologies aimed at integrating real-time information into the demand estimation process;
- enable the study of the impact of real-time traffic control upon commercial vehicle traffic;
- lead to the development of large scale freight specific stochastic simulation techniques;
- enable the testing and implementation of stochastic optimization techniques;
- lead to a better understanding of the role of key economic parameters such as marginal cost functions, and market elasticity upon the behavior of commercial vehicle traffic.

SYNTHESIS OF FREIGHT ORIGIN-DESTINATION MATRICES FROM INTELLIGENT TRANSPORTATION SYSTEM DATA