***Data Management Plan***

***Multi-Agent Reinforcement Learning for Large-Scale Coordination in Transportation Systems***

All models, data and outputs of this project will reside on workstations within Carnegie Mellon University. They will be periodically and systematically backed up onto multiple external hard drives and centralized backup systems provided by the institution, to ensure full data recovery in the event of equipment failure. The following steps will be undertaken for data management.

**Models** This project will develop models and algorithms for large-scale coordination in transportation systems. All software and model codes, along with simple demonstration applications, will be made available to interested parties upon request, and will be transmitted electronically via e-mail.

**Data** Data inputs will be obtained from the Econolite, and public databases for demographic and geographic data. The largest databases will be stored in the mySQL format, and all others will be stored in the .csv format, in computer servers hosted at Carnegie Mellon University. Data will be made available upon request, whenever this does not violate any agreement with the third parties. When sharing the data, we commit to protect privacy, confidentiality, and security.

**Outputs** The output data files will include code for the simulation environment, adaptive traffic light control strategies and alternative route planning strategies. The output data files will also include potential travel outcomes evaluated in the simulation environment. They will be made available as code repositories, mySQL databases or in standard .csv format upon request. If the research and discoveries of the project might be secured with intellectual property, we will work with our respective Technology Transfer Offices to protect potential proprietary data.

**Presentations and Publications** All significant research insights obtained in this project will be promptly shared with the practitioners and the scientific community through presentations in seminars, conferences and symposia, and through publications in scientific journals and reports. All presentations will be made by the researchers involved in the project, and all publications will be co-authored by all researchers who have actively participated in that particular part of the project.

**Educational Materials** Software, sample applications, visual interfaces and teaching materials will be packaged into modules, and potentially used in courses taught by the PIs.