***Mobility21 UTC 2018-2019 Proposal***

***Incentivizing Participation in Peer-to-Peer Ride-Sharing Platform***

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***Data Management Plan***

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 incentive design, together with tools that will be integrated into an online platform for promoting ride-sharing. Ultimately, we aim to demonstrate the potential effectiveness of a technological solution to enhance mobility in rural areas, and assess its adoption dynamics among its users. Optimization models and algorithms will be built using the Python (<https://www.python.org/>) and MATLAB (www.mathworks.com) programming languages, the IBM ILOG CPLEX Optimizer solver (www- 01.ibm.com/software/commerce/optimization/cplex-optimizer/), Gurobi Optimization Solver (http://www.gurobi.com/), all commonly used in scientific and engineering research. 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 Lawrence County, partner organizations in Allegheny County, 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 characterize the parameters of optimal incentive schemes suitable for a platform given a target population of users. The output data files will also characterize potential travel outcomes with a technological ride-sharing solution enhanced with the incentive schemes, under different user adoption and operating scenarios. They will be made available as 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.