An Intelligent Advisor for City Traffic Policies*

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Abstract—Nowadays, city streets are populated not only by private vehicles but also by public transport, fleets of workers, and deliveries. Since each vehicle class has a maximum cargo capacity, we study in this article how authorities could improve the road traffic by endorsing long term policies to change the different vehicle proportions: sedans, minivans, full size vans, trucks, and motorbikes, without losing the ability of moving cargo throughout the city. We have performed our study in a realistic scenario (map, road traffic characteristics, and number of vehicles) of the city of Malaga and captured the many details into the SUMO microsimulator. After analyzing the relationship between travel times, emissions, and fuel consumption, we have defined a multiobjective optimization problem to be solved, so as to minimize these city metrics. Our results provide a scientific evidence that we can improve the delivery of goods in the city by reducing the number of heavy duty vehicles and fostering the use of vans instead.

Index Terms—Application, evolutionary algorithm, road traffic, city policy, real world, smart mobility