

Performance study of GLOSA using an integrated cooperative ITS simulation platform

Abstract/Scope:

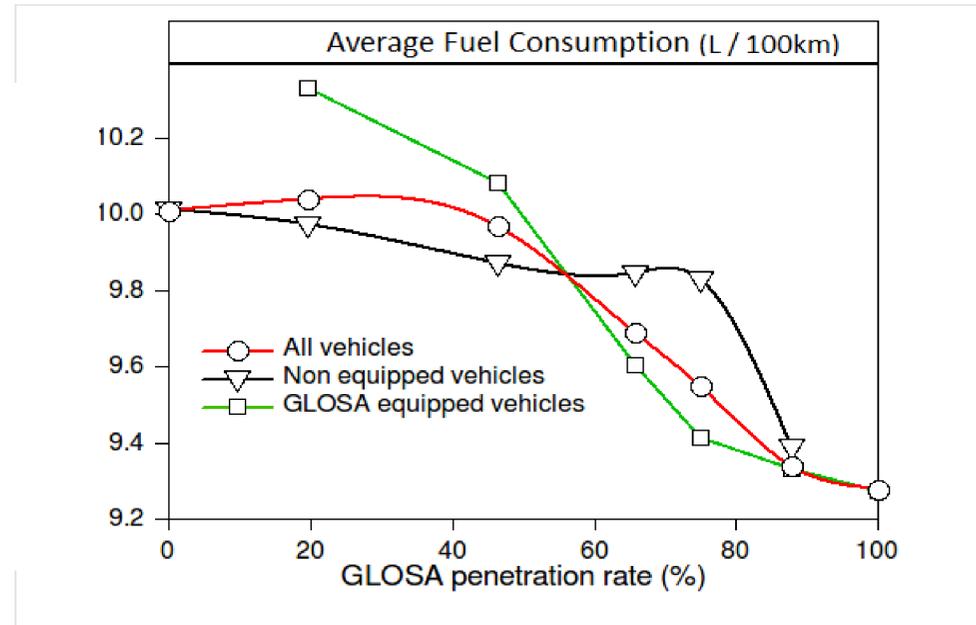
This project is an application for the communication between traffic lights and vehicles in order to gather and process information about traffic light timing and provide an advisory speed to the vehicle driver to reduce fuel consumption.

Introduction:

Vehicular communication can assist to reduce average fuel consumption especially under high traffic density and long traffic light cycles. Investigation of the impacts of V2V and V2I communications on fuel efficiency by employing different algorithms has previously been made.

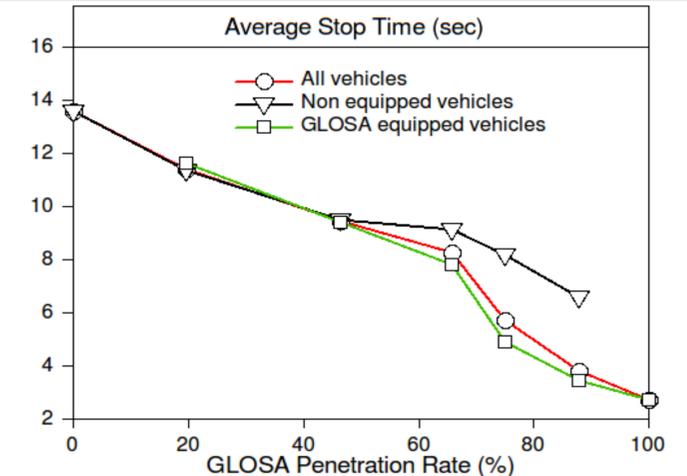
Motivations/Objectives:

- ❖ Increase traffic efficiency (less stopping time)
- ❖ Reduce fuel consumption and emissions in urban areas through C2X communications.



GLOSA (Green Light Optimal Speed Advisory)

The application scenario has two elements, the traffic light and the vehicle. Each of them equipped with a unit: RSU (roadside unit) in the traffic light and OBU (onboard unit) on the vehicle. The RSU gets information from the traffic light about timing, position etc and broadcasts it periodically. On receipt of that message the OBU calculates the time needed to reach the traffic light. From the information of the message it calculates the status of the traffic light at the time it reaches it. If it is green, it can continue its journey. If it is red, it calculates the remaining time for red phase, and provides the driver with an advisory speed in order to reach the next traffic light in a green phase. This information will be provided to the driver through a visual or audible HMI.



Summary/Conclusions:

Results suggest that GLOSA application has a positive effect on both fuel consumption and stopping time. Thus, such an application can be incorporated into future vehicles to reduce their carbon footprint and accommodate their drivers with a smoother trip.

Future work includes:

- ➔ Dynamic Traffic Light Adaptation
- ➔ Taking into account traffic congestion