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Submission Title: [Idle Stop technologies using the VLC for high gas mileage]
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Re: [vlc_sg]

Abstract: [This document presents Idle Stop technologies using the VLC for high gas mileage]

Purpose: []

Idle Stop Technologies using the VLC for High Gas Mileage

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Introduction

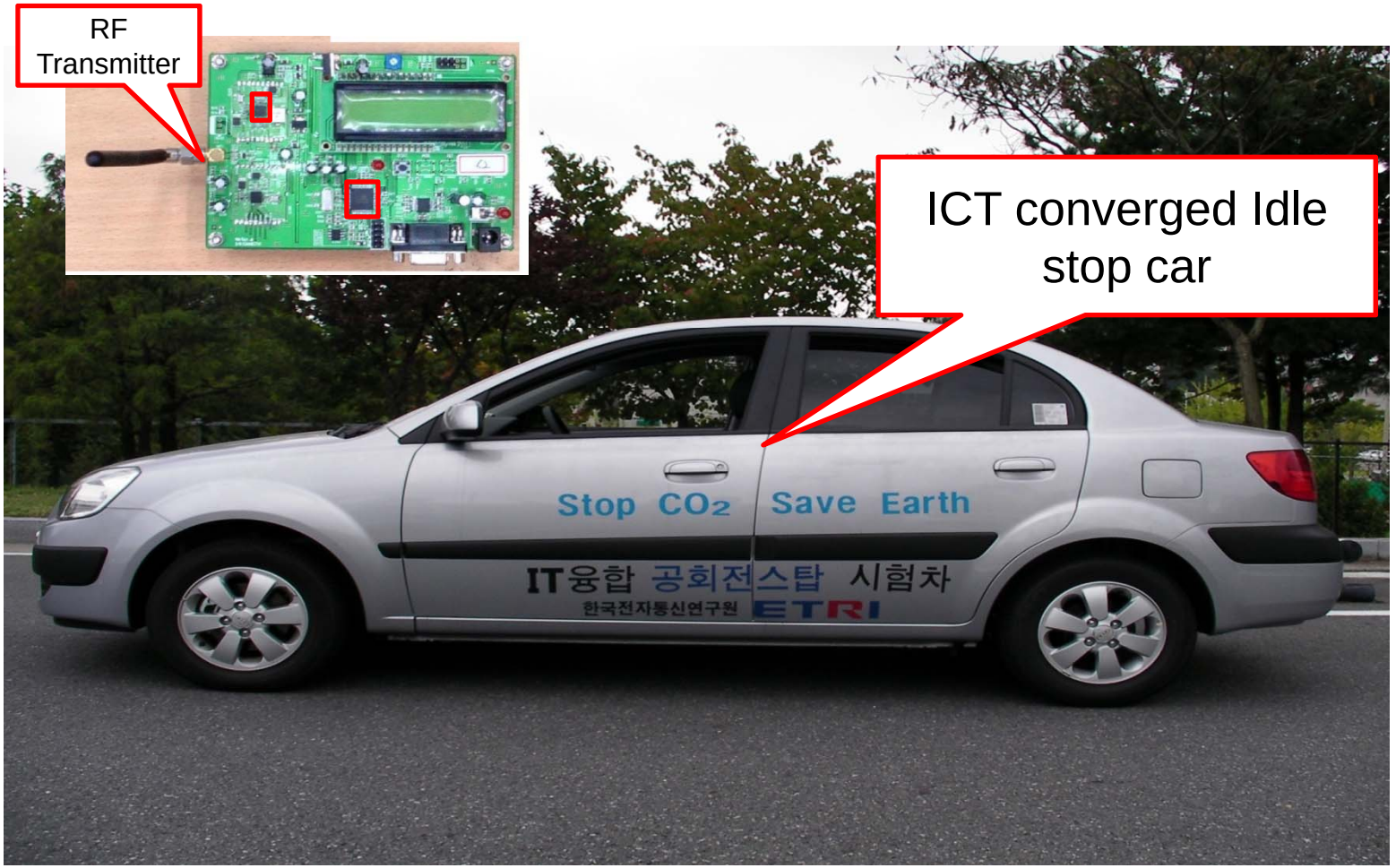
- According to the Kyoto Protocol, the environment related automotive regulations have strengthened.

- The portion of renewable energy among total energy will be 1%(currently, about 0.4%) on 2020 year.
- The necessity of energy-saving technology is growing stronger before developing alternative energy.
- Several leading auto-makers have studied idle-stop control device which stops engine while idling in traffic.

What is an Idle Stop Vehicle?

- To prevent unnecessary fuel consumption and exhaust emissions, the Idle Stop vehicle's engine is turned off when there is no need for propulsion or air conditioning.
- Conditions for Engine Stop
  - Vehicle speed is less than 4km/h & the brake pedal is pressed
  - Engine speed is less than 1000 rpm
- Conditions for Engine Restart
  - A gear is selected with the clutch disengaged
  - The brake pedal is release or the accelerator pedal is depressed with the transmission neural position

Proactive Idle Stop Test Car

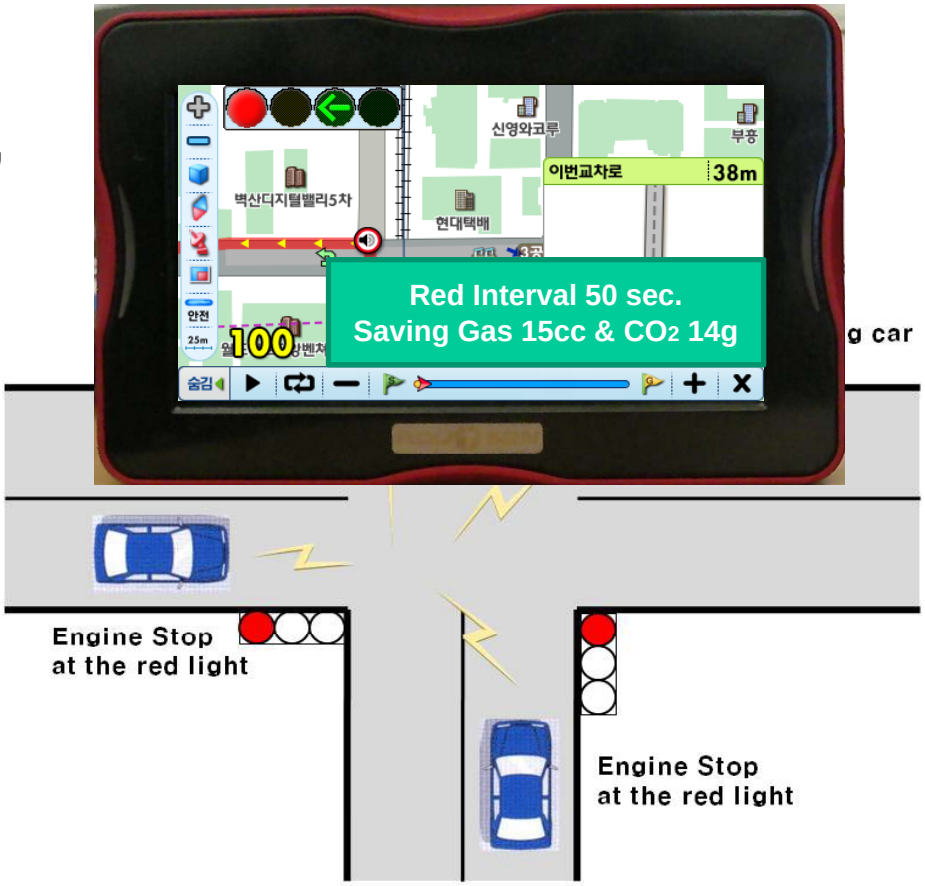


Why do we need VLC for the Idle Stop?

- To prove the effectiveness in drive, VLC is required.
  - More than 5% gas mileage and CO_2 reduction
  - Release the driver's load to fix his/her eyes on the traffic light
- For greater economy between the light and vehicles
  - To send the red light interval to vehicles stopped for the light
  - Can avoid additional traffic installation

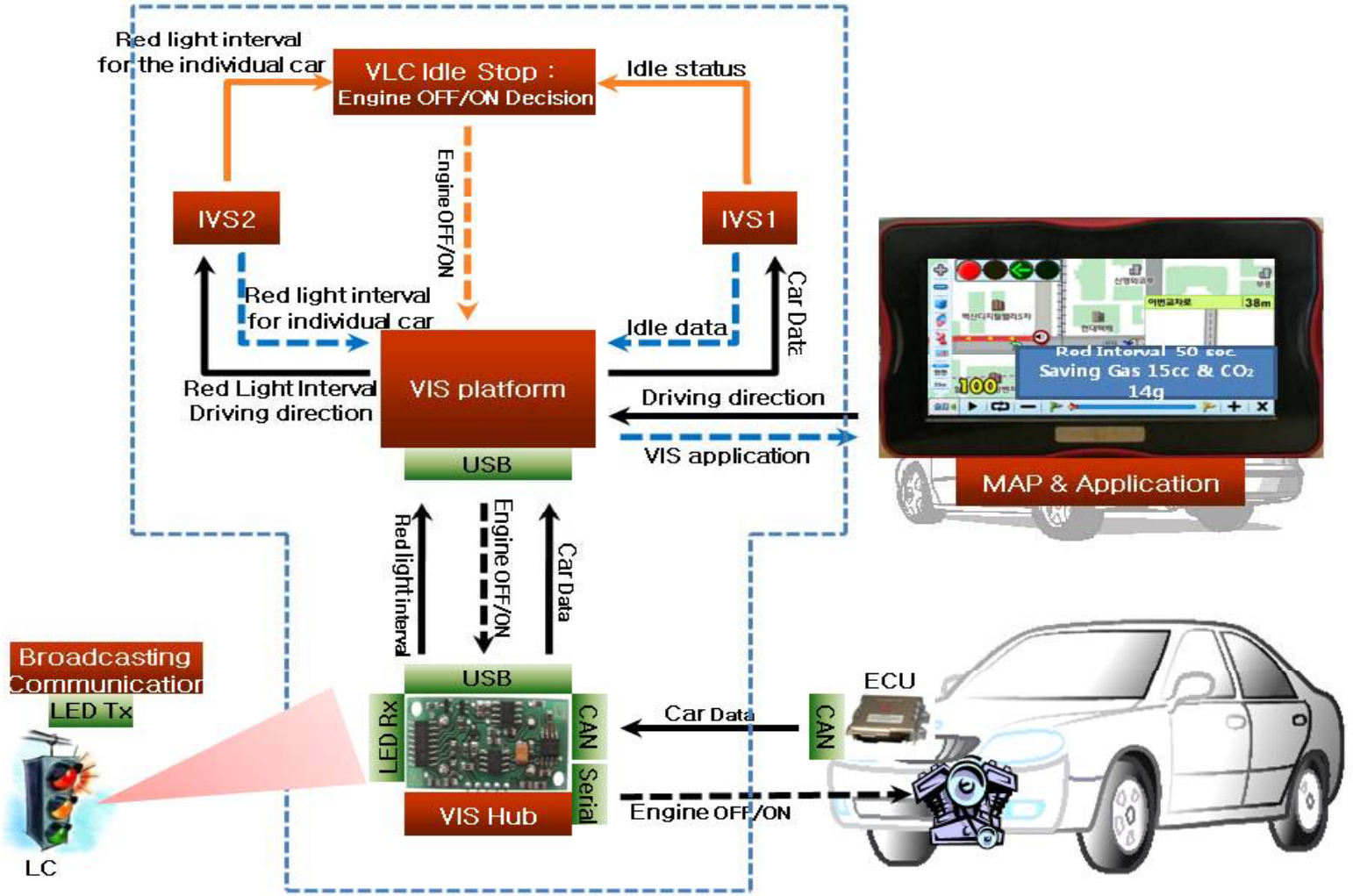
Service Scenario

- While a driver is waiting at the red light, the VIS system gets the red interval from the Traffic Light in order to decide the engine stop.



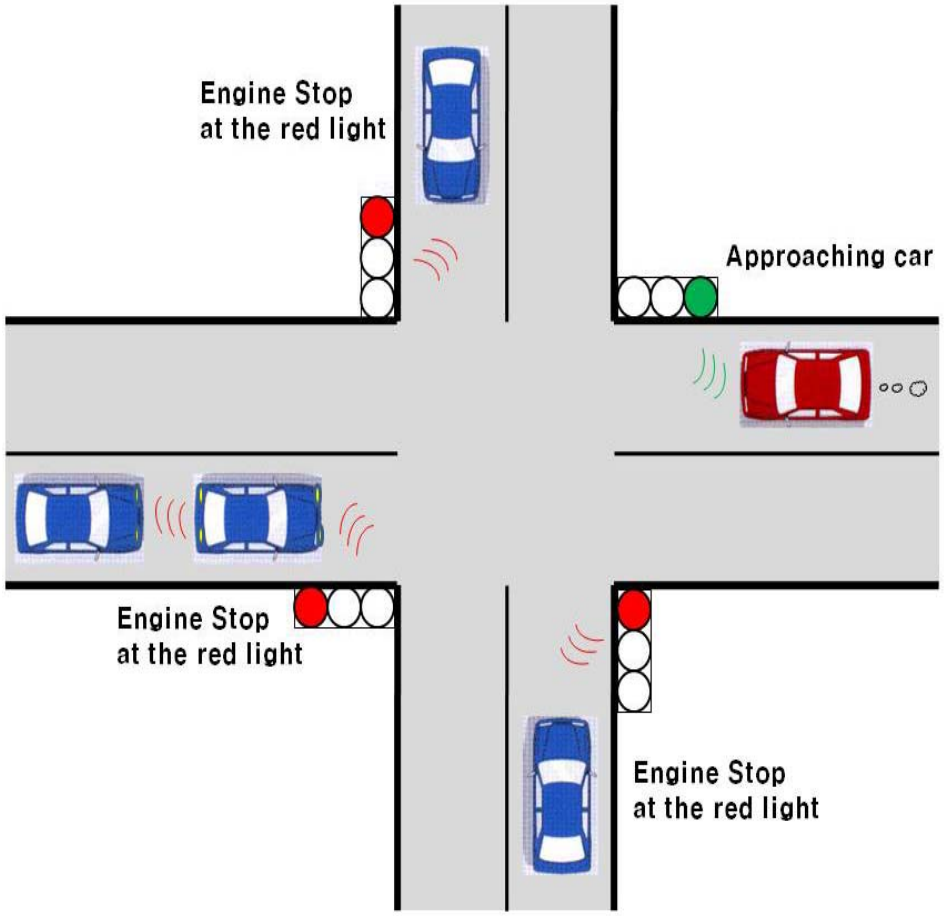
* VIS : VLC Idle Stop

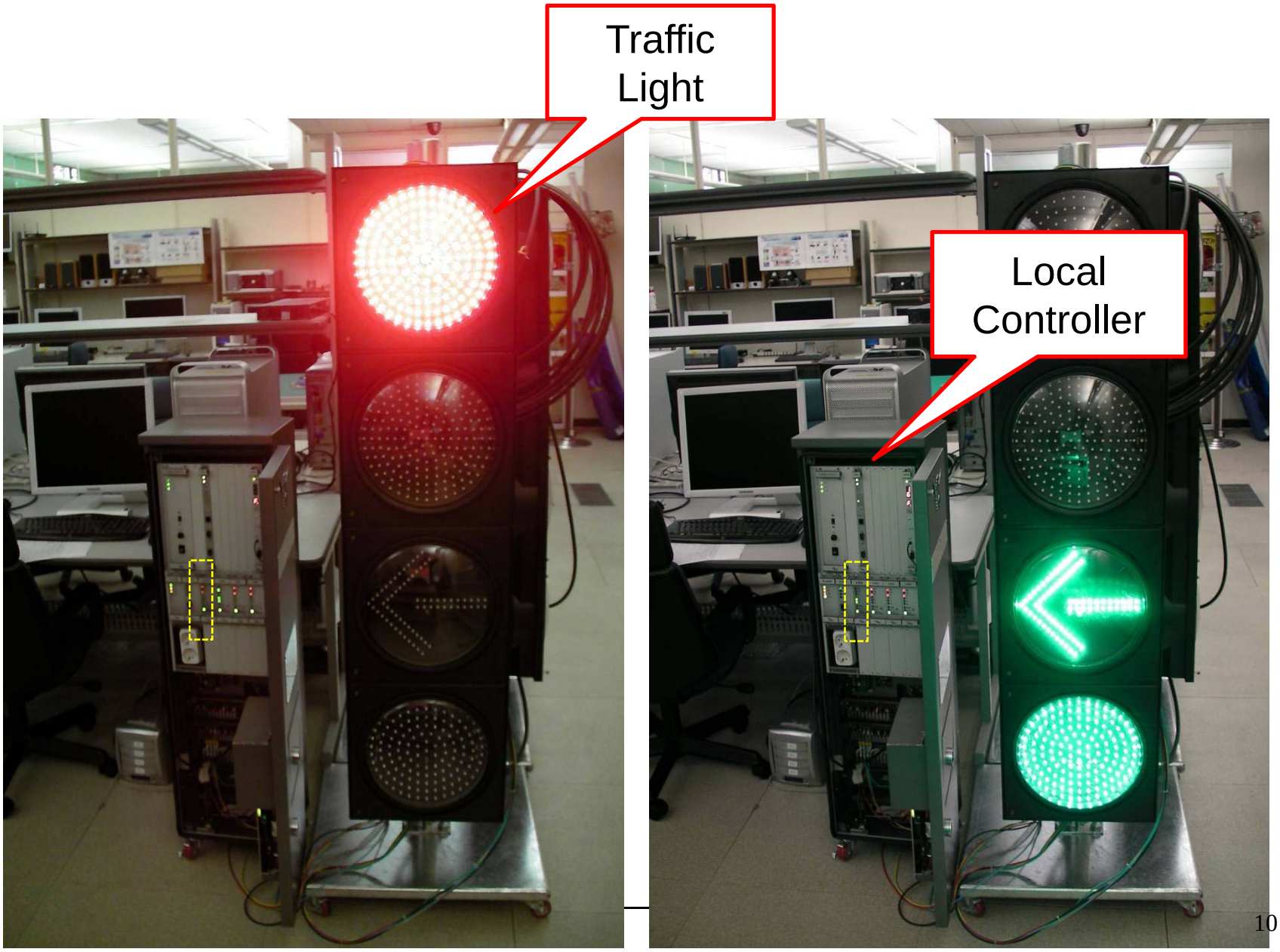
VIS Architecture



What is the strengths of the VIS?

- Can predict the Idling interval with accuracy
  - To solve the unnecessary engine stop and start
- Need not additional equipments



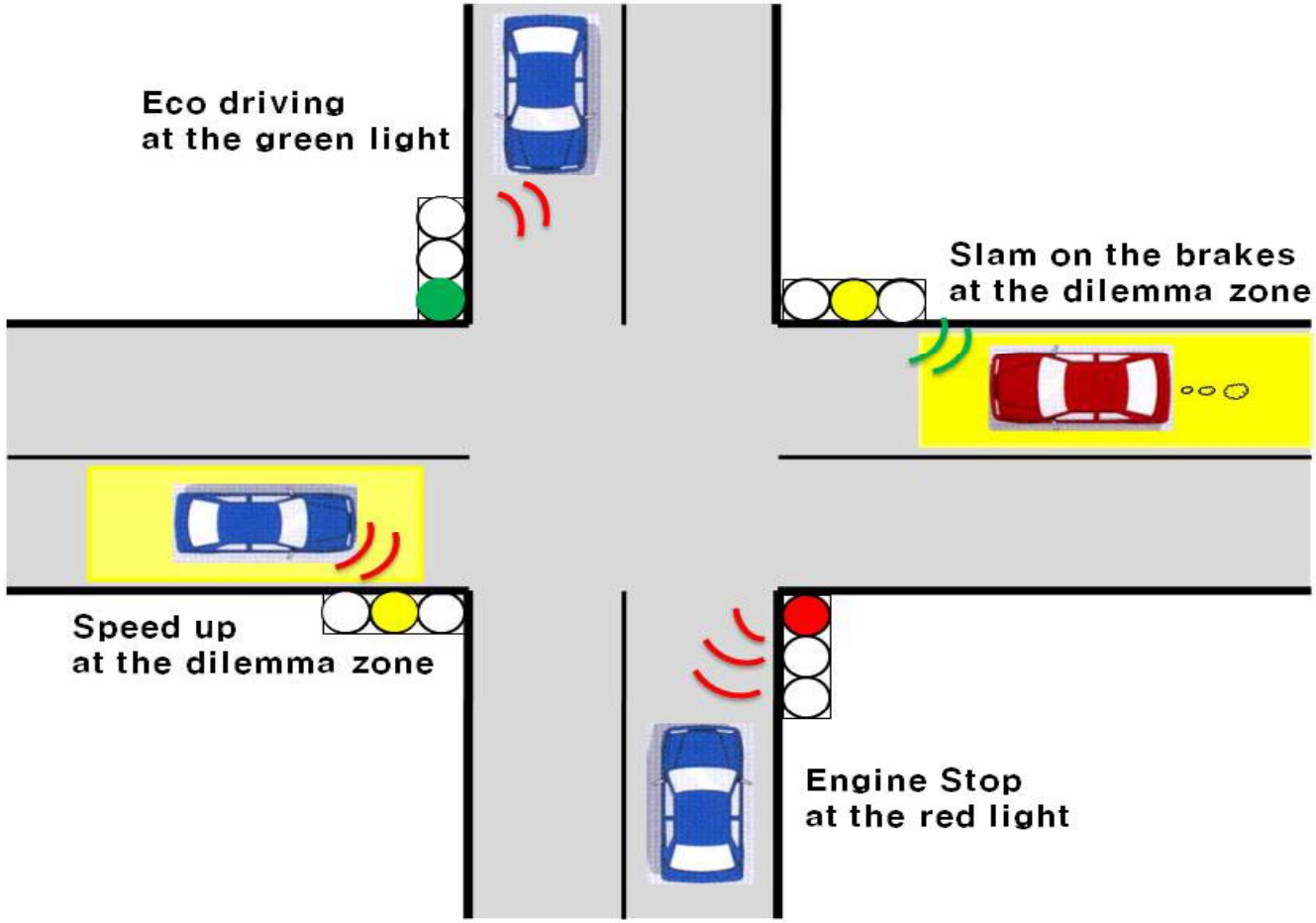

Traffic Light
Local Controller

Anything else ?

- Audi Puts More 'Go' Into Stop-and-Go

Source : ***Audi Travolution Project***

Conclusion


Eco driving
at the green light
Slam on the brakes
at the dilemma zone
Speed up
at the dilemma zone
Engine Stop
at the red light

Next Step

- Business Requirements for VIS
- System Requirements for VIS
- Considerations of Green and Yellow lights