

Introduction:

Do you ever find yourself driving along a road and wish you could quickly and safely alert another driver about a hazard on the road? It is common practice to briefly 'flash' your high beams at an oncoming driver but this has a very limited impact as it is restricted to oncoming drivers and provides no contextualised awareness of the problem or location.

Reflective indicators border just about every highway. How could we utilise this asset further to provide enhanced road information and awareness of hazards?



Problem statement:

- A driver that spots a hazard on the road has no way of alerting another vehicle travelling behind them about the same hazard they will also encounter shortly.
- Alerting oncoming drivers about a hazard is limited to 'flashing' your high beams but no reference to the problem or distance to the hazard.
- Drivers are not able to interact quickly and safely with apps that report a road problem.

Opportunity:

- Provide a network of sensors fitted to the reflective indicator posts to receive and alert with commands from the passing vehicle.
- The driver's controls are limited for safety reasons to a simple pushbutton that sends a command to nearby sensors on the reflective indicator posts. The pushbutton would be a separate hardware interface that is integrated with the dashboard and could communicate with the driver's phone to communicate the commands onto the sensors on the road.
- The sensors would receive nearby commands from vehicles and provide illuminated indication of a problem registered in that location.
- The addressed sensors would communicate back to a road authority base via the mesh network of sensors. This would create an alert that could be investigated

further or provide an initial reference for a driver to provide further information about once they reach their destination. If similar alerts are received from multiple vehicles, this could prompt further investigation via a drone or remote service unit. The mechanism for remote surveillance are not part of this opportunity though.

- The sensors would be small, lightweight, fit seamlessly onto the back of the reflective indicator post and be self powered through battery and solar power.
- The road authority could also send an alert to the addressable sensors about a credible hazard reported to remotely alert drivers in the area.
- A vehicle in distress could send an alert and immediately notify of their location without mobile phone coverage.



Scope:

- Determine options for a sensor network that can communicate in an addressable mesh network with sensors approximately 50m apart.
- Determine the power consumption for the preferred option and select size of battery and solar panel.
- Desktop study of road indication standards, vehicle dashboard displays and protocols for interfacing with RMS applications eg) Live Traffic.
- Design the protocol for addressable network, vehicle identification and vehicle communication.
- Design the human interface in the vehicle
- Determine a suitable area and cost for a trial
- Develop a proof of concept
- Determine price point per km of major roads