P2P traffic control

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Could a concept from information technology familiar to online file sharers be exploited to reduce road congestion and even traffic accidents? That is the question answered in the affirmative by researchers in California, writing in the *International Journal of Vehicle Information and Communication Systems*.

Trevor Harmon, James Marca, Pete Martini, and Raymond Klefstad of the University of California, Irvine, explain that one of the key failings of modern transport systems is the inept collection and distribution of usable traffic information. According to one US survey, they point out that less than a third of signaled intersections on arterial roads had any form of electronic surveillance. In other words, around 70% of all traffic lights have no electronic monitoring and this does not take into account the regions between traffic signals.

"The unfortunate consequence is," they say, "that, even if every highway were fully and accurately monitored, drivers attempting to plot an alternative route around an incident would have virtually no information about conditions on the arterial street network."

They explain that there is research currently underway to address this issue using local-area wireless technology. This technology will allow vehicles to form an ad hoc network that can exchange timely information about traffic conditions, incidents, and accidents. The research team has a vision for such a traveler-centric, zero-infrastructure system they have named Autonet. This network would share information through a peer-to-peer (P2P) system akin to those used by file sharers on

the internet but exchanging useful traffic information rather than music and video files.

The team has already carried out a validation of the Autonet system. In the prototype based on readily available 802.11b wireless technology, they explain, an in-vehicle computer "client" with an informative graphical user interface (GUI) continuously monitors other nearby clients on the wireless network, exchanging knowledge about local road conditions.

The system can handle measurements for approximately 3,500 traffic incidents for two vehicles passing each other at highway speeds, the team asserts. They point out that not all the wireless clients in the network need be vehicles, roadside monitoring posts could be embedded in the network too.

Paper: "Design, implementation and test of a wireless peer-to-peer network for roadway incident exchange" in *Int. J. Vehicle Information and Communication Systems*, Vol. 1, Nos. 3/4, pp 288-305

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