Research and Innovation

FROM THE FORD "SCI LAB"

April 11, 2011: FORD AND MIT "MESH" TO BRING GROUP CHATS INSIDE THE CAR

FROM THE LABS OF FORD MOTOR COMPANY researchers are working with MIT to evaluate the feasibility of making a moving Wi-Fi-enabled vehicle an ad hoc member of a spontaneous wireless peer-to-peer network. During the temporary membership, occupants could share local traffic and route information with vehicles nearby to help improve commute times and fuel efficiency.

HOW IT WORKS: The digital-age equivalent of the CB radio, the Ford protocol being tested via computer simulations leverages the Wi-Fi-enabled vehicle to create the impromptu "neighborhood" or mesh network of data-transmitting cars. With the spontaneous link-up, data about real-time traffic and routes could be collected quickly and shared with others traveling through the neighborhood at the same time. Vehicles in the peer-to-peer network with a 3G or 4G connection could also share the traffic and route info gathered by the network with the larger Internet "cloud" for mass distribution, or participate in more complex cloud-based applications such as online gaming for back seat travelers.

In the first set of simulations, Ford researchers evaluated if data could be quickly collected and delivered across the wireless peer-to-peer network. Ford researchers used sample groups of vehicles in two simulated scenarios:

- Rush hour on an 18.5-km section of I-405 near Bellevue, Wash.
- A bidirectional 8-km generic stretch of highway with two lanes in each direction

The simulations showed that the mesh network could achieve sufficient delivery rates, a critical element of usability for group network applications when driving at 70 mph.

POTENTIAL CONSUMER BENEFIT: Market demand for connectivity to devices, services and information while in the car continues to grow, and wireless and cloud computing is erupting as a major catalyst driving the development of limitless ideas for in-vehicle applications. Leveraging a wireless mesh network could make applications that seemed impossible inside the car more plausible, including group voice chats or multi-party conversations with other cars, and caravanning, where vehicles could be a part of a "caravan" and get periodic updates on location, traffic and occupant needs from each other.

Ford is using its expertise, relationship with MIT and extensive understanding of driver behavior to examine these possibilities and responsibly and safely enhance drivers' time behind the wheel.

WHAT'S NEXT: Ford researchers will conduct field trials this spring with a small fleet. Work with MIT will also continue to identify, evaluate and set parameters for the complex peer-to-peer network applications such as the group voice chats and caravanning as well as cloud-supported applications such as online gaming for rear seat passengers.

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