

Would you like a pop-up with that traffic jam?



Frank Spillers looks at the multi-modal car cockpit environment and its implications for location-sensitive services

LOCATION-BASED SERVICES MAY just be the killer application that draws telematics away from the luxury car market and into the general consumer arena. If telematics follows the Internet model, there may be a pop-up window headed to a car near you.

Design of location based services will almost certainly attract human factors expertise where the potential for real-time advertising may compete

proximity of cafés, bookshops or pubs. Second scenario: You are driving in an unfamiliar neighbourhood and you are suddenly rewarded by a local vendor who detects your presence with an instant location-based voucher.

The question that concerns telematics interface design is, how would you like to be alerted as to location-aware services? Would you like the ad to sound a bell similar to an incoming

location-aware advertising should be best displayed is not simply a matter of consumer preference, though that may be a factor. The issue relates to the greater design problem with other types of information in the driver cockpit including: short messaging, infotainment, road conditions and vehicle diagnostics. How data should be communicated and displayed falls into the domain of human behaviour

with driver attention and performance.

Imagine a few scenarios where location sensitive services will play a part in daily life. First scenario: You are driving to your next appointment and you use your telematics system to map your route and check traffic while at the same time requesting alerts to the close

mobile phone text message? Would you like a small message to pop-up in the screen on your data display area? Or would it be more convenient to have the steering wheel gently vibrate as you are driving and chatting on your hands-free phone?

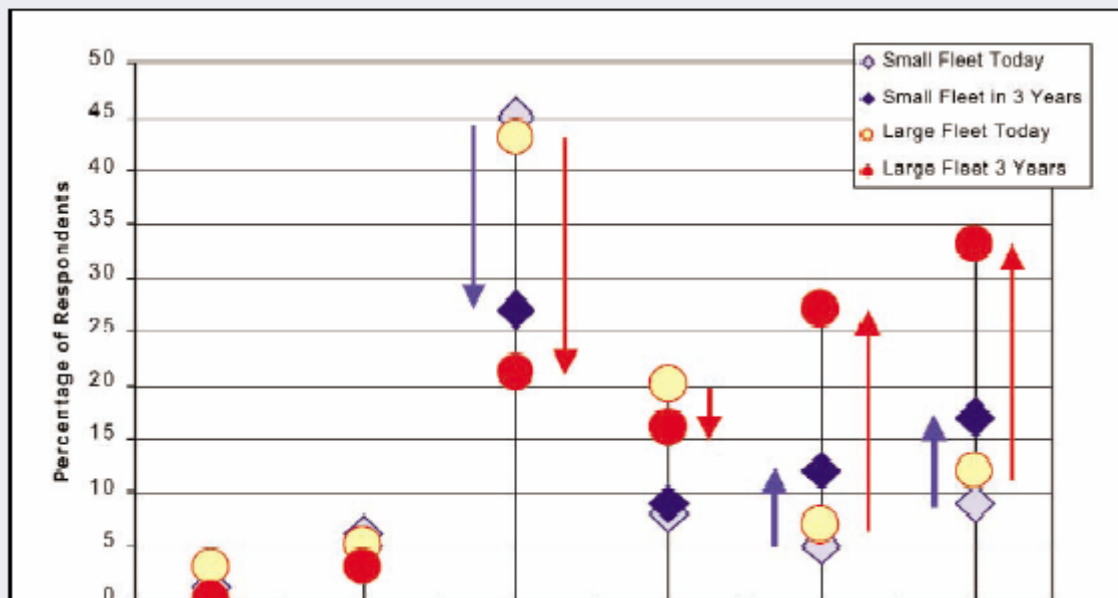
The answer to the question of how

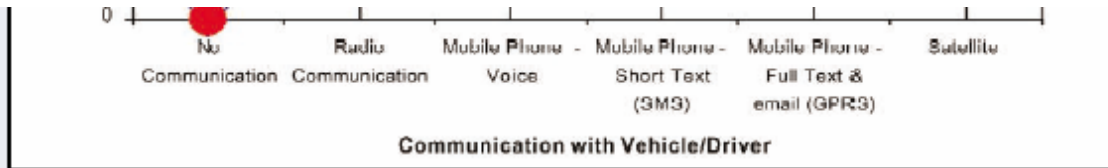
and cognitive ergonomics. As more pressure increases to “get it right” in the telematics user experience, more OEMs and Tier Ones are exploring the capabilities of multi-modal interfaces.

Multi-modal interfaces are interfaces that combine sensory modalities: sound, sight and touch being the primary three channels of information input from the outside world. R&D is already in the fast lane with research dubbed Intelligent Transportation Systems (ITS). Some systems such as a prototype device developed at AT&T Labs combine spoken and graphical interaction. Users can issue requests using speech, gesture, or dynamic combinations of the two. Meanwhile, BMW is partnering with search giant Google to provide voice-activated access to Google so that search terms can be spoken into the car’s speaker-phone, and search results quickly presented on a built-in LCD screen or on a user’s mobile phone.

Multi-modal interface design is a

Figure 1: Survey of fleet operations: How vehicle drivers communicate once they leave a depot





regular feature in aircraft and military display systems. Its adoption in the automotive cockpit by most OEMs has



Location-aware advertising will have

behaviour and what appears to be a general uncoordinated approach to multi-modal interface design.

In the fleet telematics area, multi-modal interaction is expected to rise. A 2002 survey of telematics use by european fleet operators carried out by Cranfield University and the Italian Center for the Study of Transportation Systems found that full text and email communication would rise from seven

be the jewel in the telematics crown, it may be the coordinated application of multi-modal interfaces that carry it. In summing up the advice that was probably ten years too early, the US National Science and Technology Council in 1997 stated: "The nation that develops and integrates an architecture that provides a seamless interface to the driver will dominate the automobile industry for many years to come." ■

to compete with more basic types of information, such as on road conditions

been hampered by a lack of understanding of consumer telematics

percent to 27 percent in just three years time with mobile voice calls dropping from 44 percent to 21 percent in the same period.

If location-based services turn out to

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