TECHNOLOGY TO REDUCE DISTRACTED DRIVING PROBLEM

Talking on a mobile phone while driving a vehicle–the distracted driving problem–is an acknowledged cause of serious accidents in the U.S.

The Problem

The number of cell phone subscribers in the U.S. has grown to over 300 million at an annual growth rate of 10%. Each year 6,000 people are killed and 500,000 injured and 1.5 million accidents (with concomitant insurance losses) as a direct result of distracted driving caused by drivers talking or texting on a cell phone. Talking on the phone, hands-free or not, is equivalent to driving with 0.08% blood alcohol. Talking is 4 times more likely to cause an accident than simply driving; texting is 8 times, with half the states having passed laws prohibiting texting. While texting is more dangerous, talking is far more common–currently about 10% of all drivers at any given moment–and therefore more of a problem. The service providers, the insurance industry, many state and federal agencies and most relevant industry groups have signed on to cooperate in reducing the use of phones while driving.

President Obama ordered a two-day Distracted Driving Summit on Sep 30, 2009 chaired by Dept. of Transportation Secretary, Ray LaHood. In spite of numerous federal and state laws, declarations of cooperation, education and outreach programs, all parties agreed that simply passing laws to outlaw texting or require hands-free use while driving does very little if anything to curb this use of phones while driving. This is due to the difficulty of enforcement and the general disregard of such safety laws by the driving public.

One of the outcomes from the Summit was the DOT deferring to Congress, namely, the Senate Commerce Committee, chaired by Senator Jay Rockefeller, the task of solving this problem. The problem restated: the driving-while-talking-or-texting crisis is getting worse, fast. The government, Congress, public, insurers, wireless providers–are looking for an effective solution.

Basic assumptions

As context for these problems and consequentially, possible solutions:

1. The driving public and most of the industry and government parties agree that we must still be able to use a phone while driving.
2. Passing laws, while making legislators and state and federal government officials feel like they have accomplished something, has proven to be useless as they are hard to enforce and the public pays no heed to obeying such laws.
3. Texting is agreed by all parties to be too dangerous while driving, is not essential and must be stopped. While texting and talking both use mobile phones, they are two different problems and possible solutions might be considered separately.
4. Drivers', states' powers, automakers' and dealers' interests are at stake and should be considered in proposed solutions. Halting or dramatically reversing the trend of electronic aids ('telematics') in vehicles is both politically risky and too draconian or smacks of making us Luddites in an otherwise dynamic industry.
5. The use of hands-free phones does little to reduce the dangers as it is not the dialing or handling (texting excepted) of the physical phone, but rather the mental distraction while talking, i.e., the inability to multitask, that is the real problem. Moreover, since it is a law in many states, it wrongly lulls such users into a false sense of safety enabling more dangerous longer and more frequent calls.
6. We cannot easily stop other distractions while driving such as talking to passengers, or other such activities, but these should not discourage our attempts to curb the use of phones while driving–a known, major, and possibly controllable problem.

The Solution

A simple, low-cost technology-based solution is proposed: A cell phone in the vicinity of the driver's seat and/or Bluetooth connected, emits a radio signal (RF energy) when communicating, either as frequent, very short control signals or longer if in actual voice usage. This energy or signal is picked up by a circuit installed in the wiring harness during new-car manufacture. The cost of the circuit itself is estimated to be less than $2, installed, in a new vehicle. It could also be installed in existing cars as an after-market product.

The signal, after discriminating against control signals, causes a light to blink on the outside rear of the vehicle. That light could be the existing Center High-Mounted Stop Lamp, that is, the third brake light on all cars sold in the US since 1984. It would probably be lower intensity and maybe a different color than the existing light. This light warns trailing drivers that the driver of a car in their driving space is talking on a cell phone and not paying full attention necessary for safe driving. Even more important, and, because talking on the phone while driving is now universally recognized as dangerous to all, a "tag," externally-visible to others, puts strong peer pressure on the driver to minimize such talking-while-driving.

[A scientist, Dr. Sheldon Breiner, who conceived the original gun detector now in use at airports and many public buildings, has developed this simple and inexpensive way of reducing this dangerous practice that does not prohibit talking on the phone while driving, yet changes driver behavior by discouraging more dangerous cell phone use, i.e., longer or more frequent calls. To halt texting, he proposes a simple $5 chip (installed on all new vehicles) that uses the RF-sensing technology proposed herein to send a signal to a buffer memory on the wireless provider's network software electronically time-tagging the transmitted control signals from the driver's phone causing text messages sent from that tagged phone while in the vehicle to be deleted.]

working prototype

Implementation

Since, neither drivers nor manufacturers will voluntarily adopt something, it would have to be required by law–state or federal–on all new vehicles. It should lower the dangerous aspects of the distracted driving problems while not being totally objectionable to the driving public.

While not yet verified in a controlled vehicle test, it is believed that such a technology solution as describe above should substantially reduce the distracted driving problems and do so with the best chance to win over most constituencies. While not perfect, the proposed technology is the only current one that lends itself to a low cost, install-it-and-forget-it, simple solution, that is not likely to be opposed by any of the cited constituents.

There are at least two avenues to achieve widespread implementation of some technological solution: 1) mandating use of this technology in all new vehicles sold in the U.S. through legislation by the Senate Committee on Commerce, Science and Transportation, chaired by Senator Jay Rockefeller, or 2) through an 'underwritten' version of the after-market version of the technology by exploiting an auto insurance industry (via IIHS) offer to reduce their policy holder's annual premiums, if the policy-holder adopted some certified technical means of changing driver behavior. It is possible that widespread adoption of the insurance program would eventually cause NHTSA to mandate such a solution for all new vehicles.

In general, most of the currently proposed technical solutions involve sensing that the phone is moving and causing the phone to shut down. Most observers in Washington have maintained that such a solution would not be acceptable to the public nor to commuters on trains, buses, taxis and car passengers. Stopping texting is, however, acceptable by all. Other proposed solutions involve downloading software or installing special equipment on automotive fleets, or controls on teenagers and other special groups under control of an administrator.

Changing driver behavior to make fewer calls, keep calls short or not use the phone at all, should result in reducing this dangerous driving practice. While the aforementioned technical solution suggested here might appear to be less than a 100% solution (since some drivers will, of course, ignore any attempts to change behavior), it is, for all practical purposes, benign and may be one of the few, if not only, proposed solution acceptable to most or all parties.

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