Executive Summary

A chip installed in vehicles to reduce the distracted driving problems and monitor road & environmental conditions nationwide

Summary

Distracted driving (talking and, separately, texting) is an acknowledged serious safety problem in the US that has attracted the attention of the Administration, leaders of Congress, legislators from most states—and the public. Neither legislative actions nor hands-free rules have curbed the problem. Qasandra, Inc. proprietary technology, (3 US patents issued) however, can mitigate the problem while generating license revenues. The same technology, properly enabled, can also monitor a variety of road conditions on roadways and the Interstate highway system, generating service income from States, the Federal government and the commercial market. The domestic and foreign markets, together with a potential anti-texting technology, would generate gross licensee revenues approaching 500 million dollars with royalty revenues accruing to Qasandra, Inc. of about $30 million, annually, not including possible monitoring revenues.

Talking or texting while driving is a crisis getting worse, fast. The government, Congress, public, insurers, wireless providers–all begging for some means of solving the problem. Executive orders, laws passed in most states, tragedies publicized by Obama, Oprah and the **NY Times** and yet the accident rate is still increasing. Driven by growing incidents of death and injury due to the problems cited, the above has created a perfect storm in the form of established government demand for a technological solution. See Distracted Driving White Paper.

Qasandra, Inc. was formed to solve this urgent safety problem and generate a royalty stream for its investors. We are approaching various automotive electronics companies with an initially exclusive licensee to join us in working to enlist the insurance industry and educate Congress towards a winning solution for all. The laws passed by the Federal government and by many states are not effective, putting pressure on coming up with a tech solution. Two patents (original and 'Continuation') were issued to Sheldon Breiner, our founder that warns other drivers and should reduce talking while driving. It is the only technology solution proposed for this problem that is simple (a chip), inexpensive, does not rely on other input, that once installed, does its job and the only solution thus far that does not absolutely prevent any use whatsoever of a phone in vehicle. Another patent, soon to be issued was also filed for a chip and software that will automatically stop texting while driving.

The Company has two principal objectives:

A. Distracted Driving
Get voice and/or anti-texting technology underwritten by the insurance industry for subsequent mandating by Congress or Dept. of Transportation for new cars sold in the U.S.

B. Monitoring roadways
Using anti-texting chip as 'Trojan-horse' with company-financed MEMS devices for anonymous monitoring of traffic, road and environmental conditions to sell as service to state and federal agencies and later to commercial clients.

The main auto insurance industry group, Insurance Institute for Highway Safety (IIHS), has agreement from the industry to give to policy owners premium discounts equal to about one-hundred dollars every year going forward if the policy holder installs something IIHS certifies will reduce distracted driving. The first year's rebate would pay for an after-market installation of the proposed technology in cars. Breiner met with IIHS director and top staff who expressed interest in doing so with the Qasandra technology after seeing a desktop demo of the prototype.

Meanwhile, the Department of Transportation has formally 'punted' to Congress, the task of mandating a solution for this distracted driving problem. The Senate Commerce/Transportation Committee, chaired by Senator Jay Rockefeller has attempted to introduce legislation to mitigate the distracted driving problem by prohibiting certain practices, but has not received Congressional approval, though such legislatively-prohibiting solutions do not have any effect on reducing driving/talking. The Committee could, however, mandate a technology solution, such as that proposed herein. The suggested Congressionally-mandated technology might get introduced after insurance-driven, after-market installations of the chip (see IIHS, below) with subsequent confirmation of reduced cell usage. In either case, if these actions occur, the National Highway Transportation Safety Administration (NHTSA) of the Department of Transportation is expected to mandate its use in all new cars.

The Distracted Driving Problem

The number of cell phone subscribers in the U.S. has grown to 300 million increasing at an annual rate of 10%. Each year 6,000 people are killed, 500,000 injured and 1.5 million accidents—all 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. Applying makeup, talking to a passenger or listening to the radio do not seriously safe driving compared to the intensive use of a mobile phone. The distraction problem has been shown to be due to our inability to multi-task, the longer or more intense the conversation, the greater the danger to driving. Talking is 4 times more likely, texting 8 times, to cause an accident than simply driving. And though texting while driving is even more dangerous, talking is far more common and is therefore the principal problem. Half of the states have passed laws against texting, there are (Presidential) executive orders and fleet-drivers rules against texting and about six states require hand-free cell phone use. In spite of all of these laws, all parties agree that passing a law does very little to curb the use of phones while driving due to the difficulty of enforcement and the general disregard of such safety laws by the driving public.

As for technology to license, the Company has two issued patents applicable to voice use of a cell phone, and one recently issued for automatically halting both receiving and sending text messages. Texting is so dangerous that all parties—even the wireless service companies— and all legislators agree something must be done. Our strategy is to push for both technologies with the urgency of the texting problem as the effective driver for the insurance and Congressional initiatives. The anti-texting solution incorporates, among other technologies, a cell phone chip in the vehicle (which happens to be the core of the proposed monitoring service business).

The Solution

Technology can be harnessed to help reduce the seemingly intractable threat of highway deaths and/or injuries from driving while talking or texting on a cell phone US **Patent 7,541,914**, filed by Sheldon Breiner in 2002 (but valid through 2024), and Continuation **Patent 8,154,393** describe a system on a chip we call, Signal Alert Vehicle Electronics (SAVE) which would cause the high-center-mounted brake light to blink to warn other drivers and, if mandated, would change drivers' behavior and reduce the number and length of voice calls while driving. The most recent, **Patent 8,577,352**, automatically halts texting, and what is more critical (but not obviously so), halts and stores incoming text messages until some time after the ignition is turned off. All of this intellectual property is in support of our principal objective: achieve a mandate for the technology to be on all new cars sold in the U.S

The SAVE prototype

The technology

A cell phone of any of the principal types, located in the vicinity of the driver's seat and/or Bluetooth connected, emits RF energy when communicating, as in short Control Signals ('handshake' with the system to say, 'I am here and ready'), text message or much longer in

actual voice usage. This energy or signal is picked up by the SAVE circuit and caused to respond in various ways, depending upon the mode, as described below.

For voice control application or to halt texting, it is important for the technology to differentiate between different modes of operation of the cell phone (Control Signal, texting and voice). The first occurs every ten minutes or so and is used to label the phone as ***being in a motor vehicle***; text messages can be identified by their time envelope and is used to take action to halt its onward transmission (as described in the anti-texting patent); voice is defined as lasting longer than ten seconds and takes actions as described below.

The SAVE chip with associated software then initiates any of several actions:

1. For voice use, for safety of all cars in the vicinity and, more importantly, to change driver/talking behavior, when the signal of the phone is longer than the millisecond Control Signal, say, ten seconds or so, this indicates that the phone is in voice mode. This signal will then cause a blinking external light (most likely the Center-High-Mounted Stop Lamp, perhaps a different color, high up on the rear of the vehicle) to warn trailing drivers that the driver of the caller's car in their immediate driving space is talking on a cell phone and therefore a potential threat to their safety. Awareness of this dangerous practice is now universal (in U.S.) So, when mandated, all cars will have such a light and its purpose known, and the driver is thus publicly 'tagged' by this light, putting strong peer pressure to minimize use of the phone. The chip could be programmed to give one minute talk time during which a dash-mounted light blinks increasingly faster and brighter to get the driver off the phone, after which time the phone disconnects with no additional calls possible for 20 minutes. Portable, bench-top working prototypes were demonstrated to officials in Washington. See **video** of working prototype.

2. To halt texting, the technology objectives are to recognize a text message and to 'label the phone' as one operating in a motor vehicle. This anti-texting solution is based upon cooperation with wireless carriers, which, by public statements of each carrier, government demands, and precedent-setting, user-GPS info to support the Federal law for e911--all assures this is possible.
In response to the Control Signals every ten minutes, the driver's phone is triggered to transmit to the cell tower. Via the SAVE technology, those transmissions trigger the SAVE chip, along with its unique ID, to simultaneously transmit a signal using a machine-to-machine (M2M) signal, to our server to characterize this cell phone—at this time--as being in a vehicle. A text message received by the wireless carrier can then be identified as being from a phone in a vehicle, based upon comparisons between the times on our server and their own such records of Control Signals. So text messages from the driver's phone, so identified, will be deleted while in buffer on the network. Also, text messages intended ***for that phone*** will be diverted to a buffer at the wireless carrier, accessible by the driver upon a fixed delay after the driver's phone leaves the vehicle or the ignition is off. The public would be informed that text messages would no longer be possible. (Admittedly, this anti-text scheme is partially to accommodate the 'monitoring' objectives needs.)

The Road Monitoring Opportunity

There exists a related possible large service business to state and federal agencies using the same technology as employed in the distracted driving solutions, once installed in a large number of vehicles. Access and control of what is installed in millions of vehicles is the enabling factor for this opportunity. It is almost as though, we would invent something that either the public buys or the government mandates in order to grant us access to that space and the electronics then already installed in the nation's vehicular fleet – a valuable asset to be exploited. Working with various federal government agencies such as the NHTSA (other than distracted driving folks), the EPA, Interstate Highway, several state's department of roads and highways, and the traffic-reporting media, and later, commercial interests, we can determine who is interested and pay for it.

It is possible to utilize the RF-sensing circuits described in the issued patents, the cell-phone chip needed for the anti-texting circuit (or, if necessary, added at our own cost) together with certain ancillary MEMS-type devices such as a 3-axis accelerometer, GPS, a gas sensor, acoustic sensors, and other, to monitor traffic, traffic flow, road hazards, road conditions, pot holes, incipient dangers sensed by cars braking, CO2 and other products of the environment. The cell phone transmissions would have encoded these data, as a M2M, and transmitted to buffer data server which already feeds the data to both the anti-texting buffers but now to our own data servers for data processing and relaying to our clients. Since we would be acting as a supplier to the federal government, there would be no legal prohibition to conduct such data sensing and transmission, provided the issue of privacy is assured (see below). Pursuing commercial clients would lag marketing to the government so the latter can pave the way.

These data would be gathered on the 6 million miles of roadways in the U.S. requiring only a fraction of the 250 million vehicles on the road to be useful. For both government and some commercial purposes presented below, state, several federal agencies and commercial parties would pay as much as $500 million/year. An additional opportunity exists by using available open-source software for creating a network of nodes, each vehicle a node, and virtually covering the entire country at all times, providing a network for multiple commercial purposes.

As for privacy issues, the vehicle would be anonymous, not traceable to the vehicle owner or vehicle ID (VIN). Moreover, as part of the government's mandate, it will be likely that the Federal government will force state governments to pass laws (as right turn on red lights) prohibiting police and civil suits from using blinking lights or ID of the SAVE chip from infringing on privacy rights without the driver's explicit permission. At the driver's option, therefore, it is could be possible for commercial interests to offer monetary incentives to allow the driver's ID to be used for commercial objectives, such as 'location-aware' apps or certain sensors for commercial purposes and for direct benefit for the driver, including traffic warnings, local sales, social connections, Facebook or Twitter objectives, etc. For example, some drivers might, in fact, be willing to act as monitors, not unlike a real-time Google “Street View” and relay live video monitors (switchable to off anytime), if there are no legal prohibitions for the latter.

Through dialogue with the above agencies, we can determine potential needs, future needs (newer vehicles would get more specific sensors), and the timing and demand. The sensors can be remotely re-programmed as needed (like smart phone apps). Moreover, we could get added support from wider government interests than simply the transportation administration and their budgets and not only save lives from dangerous driving but solve more problems heretofore too prohibitive to tackle. And, yes, this would represent a substantial revenue stream for Qasandra and its investors. Potential strategic partners/investors such as Amazon, Google, Facebook, Qualcomm, to name a few.

Implementation

Phase I – exploiting the insurance industry’s offer to reduce policy holder’s annual premiums $100/year, every year, if the vehicle owner installs an after-market solution certified by the insurance industry’s arbiter, IIHS. (The increasing number of cell call related accidents (1,500,000/yr) have significantly driven up the costs of claims to the auto insurers, inspiring them to be creative at mitigating the problem, including offering significant financial incentives to policy holders who employ certified technical solutions to the problem.)

Phase II the OEM phase – through mandating the technology by Senator Rockefeller’s committee–or--following a couple of years of insurance underwritten aftermarket installations, mandated use of this technology by the government, via NHTSA.

Phase III the monitoring service – this market would take off when the insurance-driven after-market penetration reaches several million vehicles or the Congress- or NHTSA-mandated voice or anti-texting solution is adopted, with sufficient vehicles to deliver meaningful data densities.

Our SAVE solution is a technological one, inexpensive, simple, low cost, install-it-and-forget-it, cannot be bypassed, no extra burden on the driver, the manufacturer, the wireless carriers, the cell phone manufacturer, the legislators or the insurance companies. About a dozen other solutions currently proposed are laws in twenty states which are largely ignored; subscribing to a service; and, most common tech solution, detecting that the phone is moving and thus stopping any use whatsoever in a moving vehicle.

The last cited solution is a solution that all those in the know say the driving (and voting) public will not be prohibited from using phones in moderation for non-texting purposes while driving. Moreover, passengers in public transportation, in the back seat of a taxi or passengers must be allowed to do so, as well. [It is possible to program the in-vehicle chip to give 1 minute talk time during which a dash light blinks increasingly faster to get the driver off the phone, at which time the phone disconnects and no additional calls for 10 or 20 minutes later. The SAVE solution, thus far, seems to be the only one that lends itself to a simple mandated solution in new cars.

The road to mandated technology

While NHTSA is under pressure from the Obama administration to solve the problems of both talking and texting, the accompanying bureaucracy of the government has caused it to defer to Congress. A mandate for a technology solution will, we believe, be established in one of the following two paths, namely, via the insurance underwriting or via Congressional mandate. In either case, after sufficient demonstrated statistics showing a lowering of cell phone usage while driving, NHTSA will endorse and mandate this solution.

The SAVE technology, including successful prototype demonstration, was presented in November, 2009, to Dr. Adrian Lund, Director of the Insurance Institute of Highway Safety (IIHS), a most respected industry advisory group, and his senior staff. Dr. Lund expressed interest and stated the above proposal where the industry is considering granting a 5% annual discount on policy premiums every year (equal to hundreds of dollars), if a vehicle owner has an acceptable device/means for reducing calls and thus the risk of accidents, installed in the vehicle. It is possible that if we follow Dr. Lund's suggestion and do some simple installation/driving mechanical/electronic testing of basic prototypes installed in a few dozen vehicles, IIHS might, itself, or a nominated lab, will conduct the real testing of our technology.

It follows that if, after testing, the IIHS certifies the SAVE solution (it does not have to be the ONLY certified solution) as effective in reducing calls and the accident rate sufficiently to justify their premium discount program, such underwriting costs would be sufficient incentive for buyers who might pay nothing and still receive discounts for several years in the future.

Thus, there would be a substantial market, equal to hundreds of millions of dollars, annually for an after-market version of SAVE via the demand from insurance premium discounts. Moreover, as is predicted above, any such widespread use is, by most observers in Washington, likely to cause NHTSA to eventually mandate such use, with or without further testing, on all new vehicles sold in the U.S. – suggested as our most important real and ultimate goal.

Market Estimates

<u>Phase I -- Insurance-driven (OEM) after-market</u>

Total available unit sales of the U.S. insurance-driven after-market is estimated to be 150 million cars (driven by auto policy-holders) in the first 5 years from a total of 250 million cars and light trucks total insured. Generate *potentially* annual revenue for the licensee and its dealers of $400

million (for chip + after-market parts= $15 X 150 million ÷ 5 years). Installation is outsourced. Annual license royalties at $1/vehicle would be $30 million.

Phase II – Mandated new car market

The U.S. new car market is, normally, 17 million new cars per year. Potential annual revenue for the licensee to make and sell the chips in domestic market for technology under issued patent to reduce talking while driving would be $100 million through 2024, the life of the issued patent (maybe $5 to $10/unit because it is patented, somewhat less if sublicensed). Annual license royalties to Qasandra would be about $20 million. The aftermarket insurance industry maket drops a few years after any Congressional legislation or DoT mandating use of the technology, as most cars will soon be equipped.

Foreign (EU, Asia) market, for both anti-texting and distracted driver solutions are estimated to be about equal to the domestic market.. Thus, total annual world-wide royalty revenues to Qasandra for distracted driving applications could be about $30 million, annually through 2030 for all these solutions.

Phase III – Monitoring Services market

It is crudely estimated that services revenue from the Federal government could be $150 million, annually. State transportation and other such agencies would produce $200 million. Media, radio and TV might be $30 million, Unknown Google-type commercial markets might be $100 to $150 million (the latter coming from commercial interests, some to our 'drivers' as payments.) These could total more than $500 million/year or more.

Action Plan

- After talks with IIHS and Senate Commerce Committee, conduct general testing of prototypes on a few dozen vehicles. And with State Farm (Laurette Stiles) for support.
- Conduct dialogue with NHTSA, EPA, CALTRANS, other for assessment of technology and potential interest and legality for the monitoring services market

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