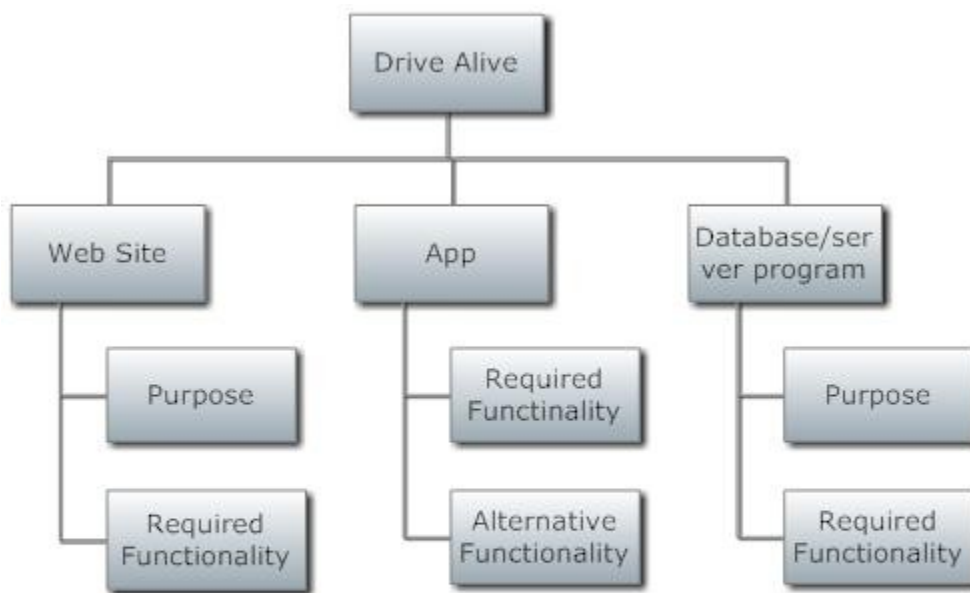


Design Document for Drive Alive

Purpose:

Over 5000 people died last year as a result of cell phone related distracted driving. All current measures being taken to try and stop this growing problem are punishments or discouragement. The Drive Alive system is going to try and fix this problem using a unique reward and encouragement based system to give drivers the incentive to put down their phones and pay attention while driving.

Main components:



The three main components of the Drive Alive system are the Mobile App, Website, and the database. Let's explore each of these components and their purposes and functionalities.

Mobile App

Purpose:

The mobile app's purpose is to provide an easy way to gather data about cell phone activity while a driver is driving.

Required Functionality:

The following are a list of requirements for the app to serve its desired function.

1. Upon the app opening the app takes the user's current position using the phone's GPS system.
 2. Now the app runs in the background (on Android phones) and in the foreground (on iOS)
 3. Once running in the background (Android) the phone monitors applications that run in the background to make a determination on if the user was driving distracted or paying attention. Alternatively the app may monitor for the amount of phone inputs regardless of app ran to make the determination. Based on pre programmed settings the app will look at the data collected while the app was running and return a "failed" or "successful" result.
 4. The app has an "Add stops" button. This buttons purpose is to accommodate user's who are going to end up at the same location as where their trip started. Such as delivery drivers or something like this. When a user presses this button the app will ask after how much time and frequency he would like the GPS to take a location check. Pre set amounts of time and frequency's such as every 10 minutes or every hour will be available to the user as well as a custom option where the user can enter his own selection.
 5. Information gathered by the app during the time the app is active is stored in temporary inaccessible by the user read only memory stored locally on the phone.
 6. Upon closing the app the app will need to take another current position check.
 7. During the app closing process the app determines an average rate of travel for the "session" or "trip" (the time elapsed in-between the commands to open and close the app). It bases this average rate of travel using the algorithm Total distance traveled / amount of distance traveled. For example if a user traveled 60 miles in 60 minutes the user was traveling 1 mile per minute or 60 miles per hour.
 8. Also upon the app closing the app will check for two "Failed" or "Successful" results. One based upon if the user was driving or not. It determines the result of if the driver was driving or not by checking the average rate of travel. If Average rate of travel is greater than or equal to 8 miles per hour then the result returns "successful" if not then the user "failed". Next based upon the cell phone activity monitored. Certain apps will be allowed and not allowed for example an app that plays music or radio will end up being allowed and sms texting and email apps will not be. It is unsure exactly which apps will be allowed and prohibited at the moment but will be easily updatable within the code. If only allowed apps were run during the "session" or "trip" then it will return a "successful" result and if prohibited apps were run it will return a "failed" result. If both conditions return a "successful" result data collected from that particular "session" or "trip" is electronically transferred to our database/server application. If one or more of the conditioners return a "failed" result no data is sent. In both instances after those checks are made the data stored in the temporary data is cleared off of the phone's temporary memory.
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9. The app has a feature that does not allow a new instance of the app to be run for 20 minutes after being closed to prevent abuse. Alternatively if the phone does not allow for this information attempting to be sent by the app upon the app closing to the database will not be sent even if both conditioners return a ‘successful’ result until 20 minutes has transpired.
 10. In the iOS version the app is much simpler. The app just tracks the amount of time it runs in the foreground and transmits that data if the if you were driving average rate of travel determiner returns a “successful” result.
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Database

Purpose:

A way is needed to collect, interpret and store the data collected by the Mobile App so that the information can be traded for rewards for its users.

Required functionalities:

1. Be able to store data about drivers in a clear, concise, and complete manner easily readable by any user.
 2. Needs to be able to differentiate between different user’s and separate the information being stored.
 3. Needs to be able to link up accounts on websites with the people in the database using the information provided by the user’s.
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Website

Purpose:

The Drive Alive website’s purpose will be to present information about Drive Alive to potential new customers clearly, professionally, and completely. It will also give any company, group, organization, or individual a chance to participate in the giving of rewards to the safe drivers through a unique donation system. It will also display any donators in a contributors section and allow them to promote themselves for donating.

Website Functionality

1. Allow users to create an account with the Drive Alive Website.
 2. Have a page showing the safe drivers of the month displayed anonymously in a copy of the database.
 3. Users who sign up for an account can be linked to being a person in that database.
 4. When user's login to the website they can see if they have won any donated rewards they were randomly selected to receive.
 5. Any company, group, organization, or individual who wants to donate anything can do so and those donations will be given to random drivers in the copy database on the website.
 6. Users can then check back often to see if they've won any additional personally donated rewards.
 7. Have a contributors list of people who donated rewards for random safe drivers on the website. This should be able to display their company, link or whatever else the donator wishes to put on the website.
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Conclusion

In summary the app proves you are driving attentively and for how long as well as some other information. This information is automatically sent to our databases and we plan to trade that information for rewards for the safe drivers who ran the app and proved they drove attentively. Using the website it allows anyone to participate in the donations of rewards. Our primary reward giver will hopefully be a car insurance company giving out an attentive driver discount. I plan to also contact government and see if we can use grant money that the department of transportation and other branches of government get to help keep the roadways safe for EZ pass credits as another incentive to use Drive Alive.

Why car insurance companies would definitely get behind this project:

Top 10 Car Insurance Companies by Market Share in 2009

Car Insurance Company	Market Share (2009)
State Farm Mutual	18.6%
Allstate	10.5%
Berkshire Hathaway Inc (GEICO)	8.2%

Progressive	7.5%
Zurich Financial Services (Farmers)	6.4%
Nationwide Mutual	4.5%

According to Harvard researchers cell-phone-related crashes cost about \$43 billion dollars per year.

Let's break that down into how much each car insurance company could possibly save if their customers weren't crashing in cell-phone-related crashes.

State Farm Mutual:	\$7,998,000,000.00
Allstate:	\$4,515,000,000.00
GEICO:	\$3,526,000,000.00
Progressive	\$3,225,000,000.00
Farmers:	\$2,752,000,000.00
Nationwide:	\$1,935,000,000.00

Obviously these are estimates as the car insurance companies aren't responsible for 100% of the damaged caused by these accidents. On top of that not all of your users are going to stop using their cell phones while driving, but even if you account for all that you can see that the estimated savings could be huge because these are pretty staggering numbers and even at 30% of these numbers they are still ridiculously large.

Let's use state farm as the example and pretend that they only end up saving 30% of that nearly 8 billion dollar figure, because of them not being responsible for all the damage and or not everyone uses Drive Alive for the discount. That's still \$2,399,400,000.00 Dollars. If State Farm were to give a 50\$ discount to its members for running it each month they could afford to give about 3 million drivers the discount each month without losing money.

Now let's look at the money State Farm could make. Let's say 3% of the market share decides to move over to State farm because of Drive alive we can calculate approximately how much more that car insurance company would make per year. We'll use for these calculations the figures \$1736.00 as the average premium price per year per customer. That number came from carinsurance.com. We will also use the number 35,118,250 as the total amount of insured drivers in the United States. We got that number by looking at two statistics, the first being from the US Bureau of Transit Statistics saying in 2006 there were 250,844,644 registered vehicles in the United States. The second being statistics from the IRC (Insurance Research Council) saying about 14% of drivers are uninsured. By combining those two statistics I came up with that figure of 35,118,250 drivers.

Now let's say 3% of those drivers are willing to switch to the insurance company that offers an Attentive Driving discount by using Drive Alive. That comes out to 1,053,547

drivers. Now let's multiply that number by the average premium rate per year of \$1736.00 dollars.

That comes out to a whopping \$1,828,957,592.00 dollars per year extra.

So what is the bottom line? Why should a car insurance company invest in Drive Alive?

They could save and profit.

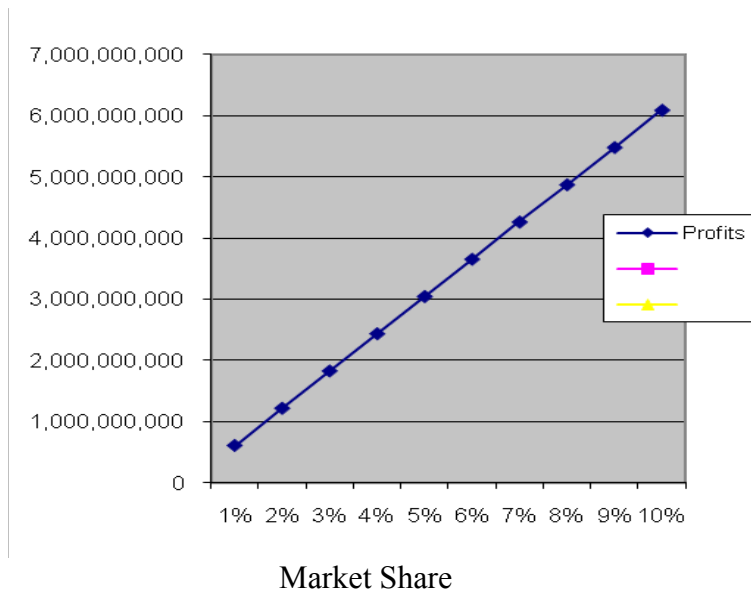
Savings:

They would be looking to save approximately between \$580,500,000.00 and \$2,399,400,000.00 dollars, depending on the size and popularity of your insurance company.

Profits:

You could profit about \$1,828,957,592.00 dollars if you were to get 3% of the market to switch over to your insurance company by offering the Attentive Driver discount using the information gained by Drive Alive. If you were to get a little more or less of the market share percentage to switch then you would make a little less or a little more than that figure, but it's still obviously profitable to use this system.

Graph: Below is the graph representing the above data in picture form.



Sources:

<http://www.carinsurancecompanies.com/what-are-the-top-10-car-insurance-companies-by-market-share/>

http://www.textecution.com/buy_now.php

http://www.mlive.com/news/kalamazoo/index.ssf/2010/04/computer_apps_can_help_you_r_cu.html

<http://www.cbsnews.com/stories/2010/01/12/earlyshow/main6086546.shtml>

<http://www.iihs.org/news/rss/pr092810.html>

<http://ajph.aphapublications.org/cgi/content/abstract/AJPH.2009.187179v1>

<http://www.distraction.gov/stats-and-facts/index.html>

http://en.wikipedia.org/wiki/Mobile_phones_and_driving_safety#Texting

<http://www-nrd.nhtsa.dot.gov/Pubs/811379.pdf>

http://www.car-accidents.com/cell_phone_car_accidents.html

<http://www.facebook.com/pages/FADD-Families-Against-Distracted-Driving/273919225954>

http://www.getizup.com/what_is_izup/price

<http://www.txtblocker.com/default.aspx>