Team 3
Luke Marsh, Kyle Jeffries, Christopher Wood, Ian VanBuren
10/20/2015

Process Report

To come up with some initial ideas for project concepts we decided to brainstorm which yielded roughly 16 ideas with which to work with. We thought about existing systems that we could make better, ideas that could make driving safer, and concepts that would make a task more convenient for truckers. From these 16 ideas we narrowed it down to our five best concepts. To make decisions on which concept to implement, we used a concept selection matrix across five main criteria; Ease to Implement, Ease to Maintain, Grabs Audience, Low Cost, and Sustainability. This gave us the chart below.

	Easy to Implement	Easy to Maintain	Grabs Audience	Low Cost	Sustainability
Travel Companion			+		+
Dating App	+	+		+	
Alertness		+		+	
Trucking Game		+	+		+
How's My Driving?	+	+	+	+	+

The five ideas that we chose were all good ideas and met the expectations for some of the criteria. But after comparing our results of each of these across the other ideas we decided to select the How's My Driving implementation. Everyone agreed that this was the best concept because it is the most marketable, has the best real world application, and it meets the most criterium when compared to the other four concept ideas. The original concept for How's My Driving was:

An android app that allows other drivers on 81 (cars or truckers) to crowd source info for a truck. Each truck would have a code of sorts that identifies it among all other trucks and anybody with access to the code could send information to the truck directly. If the driver was driving dangerously, they would be notified in real time. A way to improve driver safety overall.

This system would be easy to implement and maintain, especially if we chose a web-based implementation. Using a website that was portable to multiple devices would not be hard to create, and very simple to keep up with, as it handles most if its data in a database. This system would also be very appealing to a broad user-base, as companies would be able to monitor their drivers, and the public could finally have an easy medium to give the drivers the feedback they've wanted to for so long. The project has no cost bloat, meaning that it only deals with the cost of a server, but nothing more to drive up the cost. Finally, it's a long-lasting system

that will always be useful as long as we have trucks and truck drivers. The fact that this project hit all of the key goals made it a no brainer for us to pick.

Now this concept is built off of an already existing system that has a call number on the back of trucks to report how the trucker is driving. The existing system is extraneous to use because of having to call the number and then having to speak with an actual person, or machine, before the information getting reported. It is also not relaying information to the trucker in real time. With this new implementation the system would be real time and easier to use than what was preexisting. This leads us to our refined idea:

A responsive website that can be accessed from mobile devices that will give the user an ability to send reviews, comments, or warnings to truckers using a code specific to the truck. We will implement this using Ruby on Rails, MySQL, a simple API and it will be hosted on OpenShift. The front end will use jQuery, API Ajax Calls, Bootstrap, and SASS.

We decided to use this stack because these are what we as a group are most familiar with. Since we are familiar with this stack it should make the programming aspect more fluid so that we don't have to spend all of our time learning new approaches instead of implementing.

Further research was conducted into existing systems similar to ours. The standard "How's My Driving?" phone number uses a middleman, the phone operator, to convey messages from users to the truck companies, but not to the drivers themselves. This was an important discovery, as we want to keep the truck drivers part of the conversation. This way the drivers have opportunity to receive feedback and improve upon it, instead of getting hit with a ton of complaints and no time to redeem themselves.

Other systems have been put in place for teenage drivers, through a system called Text Them In. This helps keep teenagers, a demographic known for a very large percentage of accidents, more accountable. This encouraged our idea of creating a demographic-specific version of "How's My Driving?" to account for a community that gets a lot of backlash from other drivers on account of their driving.

We split the work into four categories; Wireframing, Front-End, Back-End, and Testing. Wireframing will include the initial design of the interface such as where buttons will be placed, what does the home screen look like, how would you access a custom entry, etc. Front-End will oversee the programming of the actual interface and how everything looks. Back-End will cover the infrastructure of the application and how things will work behind the scenes. Testing will see how the application holds up to real world situations by giving sample users tasks to complete and get feedback from. These work categories will be delegated as follows:

	Wireframing	Front-End	Back-End	Testing
Luke			X	X
Kyle	X	X		
Christopher	X		X	
Ian		X		X

We believe that splitting the work up like this will keep us accountable while also being fair. As of now, we believe that we have a good plan for moving forward with our project and that our design process has been sound, and look forward to continuing into the implementation of our design.

Concept Design Report

Our target audience, truckers, work long, grueling hours transporting goods from one location to another. Truckers are also probably one of the most hated communities along I-81 by other drivers, considering how many trucks are on the interstate, as well as the way that truckers drive, which ranges from overly aggressive to beyond passively.

However, much of this job is done alone, which can lead to a multitude of consequences, ranging from a lack of focus, lack of alertness, and loneliness. There is a very good chance that these issues correlate to the issues that other drivers have with truckers. Our goal is to tackle at least one of those issues with our system.

Our first idea is a speech-to-text mobile application that serves as a Travel buddy to check for Truck Stops, the frequency of rest stops, and traffic. Functionally, it would be close to a trucker-specific Siri. The application acts as a passenger, as it could change music on your behalf, give useful information, and possibly tell the occasional bad joke. Driving solo, it can be very dangerous to look up navigational information or change music on your own. More often than not, on a standard car trip, it would be the job of the passenger to do these things, so giving all of the passenger's responsibilities to a computer system would increase driver safety.

The next idea we had is a dating app for truckers along I-81. It lets you rate other truckers on the fly. The HUD shows you pictures of truckers and lets you rate their driving, attractiveness, and tells you about their interests. There are many group-specific dating systems, like the one for farmers, so a trucking dating system wouldn't be too out of the question. Most of the time truckers spend working is spent alone, so this system would help them reach out to other people in their occupation, as there might not be much time or reason for truckers to get to know each one another otherwise.

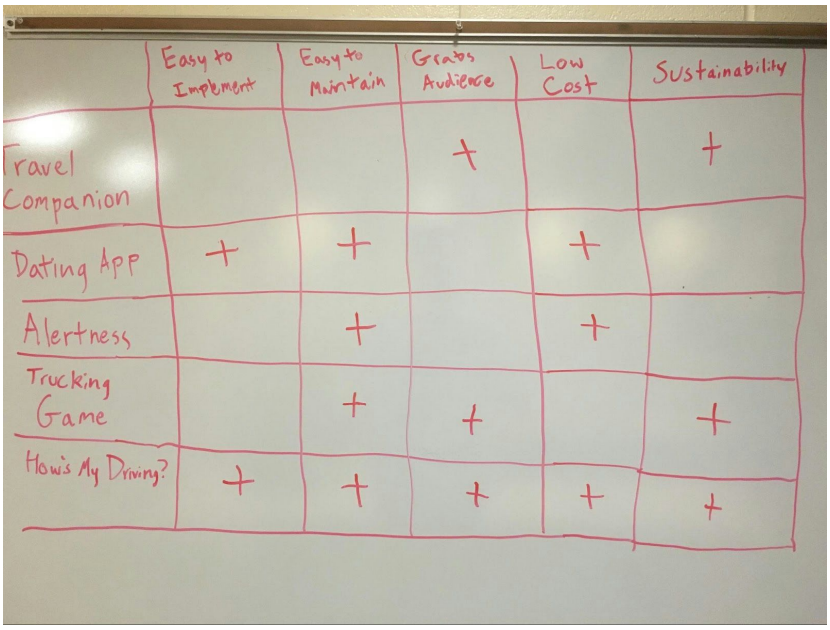
The third concept is an app that tracks a driver's sleep schedule and current level of alertness, as well as reminding the driver to not drive while tired. It tries to keep the driver at high levels of alertness while driving to avoid accidents. The system alerts companies of high risk drivers and reminds them to keep their drivers safe. Possible other functionality could include trying to keep drivers alert to cars in their blind spots, or, considering drugs are the highest cause of trucking accidents, constantly reminding them not to use drugs.

Another idea is a mobile app that turns Truck Driving into a game. You get points for going further and passing other trucks. When near other trucks there could be some sort of "truck battling," which could give out points for smooth passing of another truck, as truck congestion can be a real problem on I-81. This awards points for the least amount of time spent too near to another truck. Other background mini-games based off leaderboards and stats would also encourage safe and efficient driving. Users would gain Trucker Miles for high scores. There are many different directions this system could go, as it basically adds a fun competitive element to the job and engages the drivers.

Our final idea is a mobile application that allows other drivers on 81 (cars or truckers) to crowd source info for a truck. Each truck would have a code of sorts that identifies it among all other trucks and anybody with access to the code could send information to the truck directly. This code could be a company-generated code, a license plate number, or a truck ID number. If the driver was driving dangerously, they would be notified in real time. Users would be able to

enter a truck information and then attempt to send them a message to inform them on how their driving is. This is a way to improve driver safety overall, but also inform the companies on how their drivers are doing.

When it came to choosing a single project idea, we decided to utilize a concept selection matrix to help us decide which project made the most sense to pursue. The categories that we used to help us determine which concept made the most sense were easy to implement, easy to maintain, a concept that grabs the audience's attention, low cost, and the sustainable usefulness to a user of a certain concept. When we went through and talked about each idea's pros and cons, we came up with an interesting matrix.

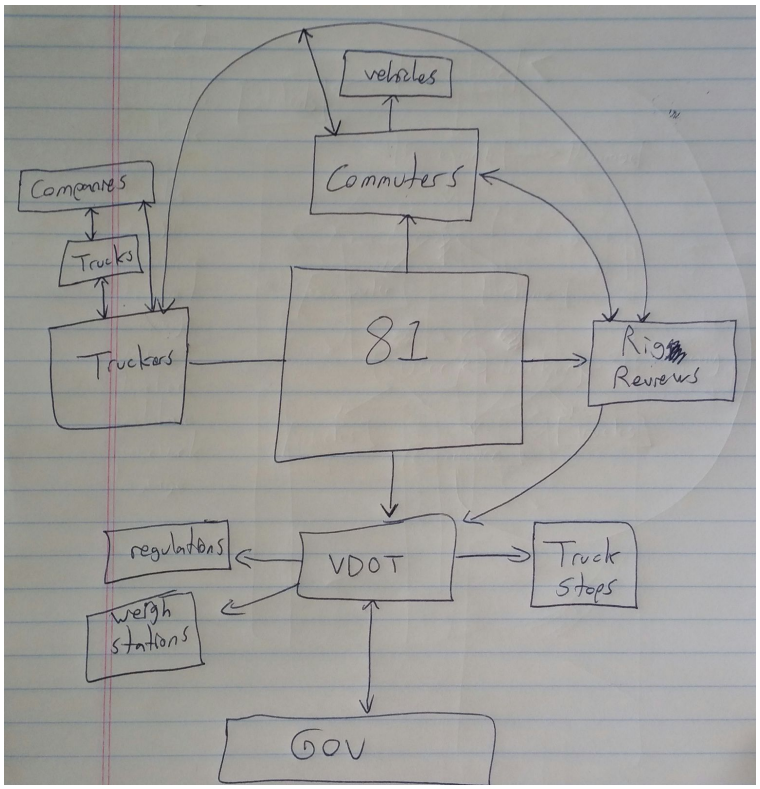


Almost immediately, we realized that the travel companion was going to be simply too difficult to properly design with the timeframe we have been given. In the same way, we realized that the alertness app was going to be out of the scope of our knowledge when it comes to how to determine alertness, and interfacing with wearables. The proposed trucker dating app seemed like a good idea at first, but based on research and our selection matrix we decided that it did not necessarily have a large audience or real usefulness with the variety of dating apps that are already available. Finally, the trucking game was the last idea that we ruled out, mostly for being incredibly difficult to implement, and we worried that there would be a lot of design complications when it came to how to keep truckers and drivers safe while enjoying a game on the road.

Through process of elimination, we realized that it made the most sense to go with our crowd sourcing info to a truck, similar to the "How's My Driving?" signs that you see on most trucks. This idea has a lot of positives and very few negatives. We believe that this idea will be easy to implement and maintain, and if we brand it correctly it will also be a fun tool for truckers and drivers alike to interact on the road. Also, because it completely revolutionizes an existing system, there will be a relatively low cost associated with implementing our new system.

When we came to this conclusion, we began to think carefully about the brand, content, and function of this system. In this case, the branding would be especially important. For a

crowd sourced application like this, we realized that a broad user base would be particularly crucial to a successful product. Branding was an area that we really focused in on when it came to our design, because content and function are relatively self explanatory. When it comes to the content of our idea, truckers and trucking companies are looking for better ways to interact with the drivers that they share the road with. The content of our idea will be almost completely user generated, and because of that we realize that our design must focus on usability, creating a smooth experience for the user so that they are willing to create this content. Finally, the function of our idea in the real world would be to act as a medium between truckers, their employers, and the drivers on the roads around them. We feel that by creating this platform will keep truckers more responsible and possibly allow them to understand some frustrations of drivers, as well as positive impacts that they have on nearby drivers. This will also be useful for trucking companies who are hoping to see how their truckers do while they are out on the job, and perhaps rewarding drivers who get positive reviews. We imagine that the interactions of our system with the audience would be as described in the following picture:



When looking at the design, we knew that we needed a system that could be accessed on the go, as well as at home. For this reason, we decided to create a responsive website that could be utilized on a phone just as well as on a computer. It is important to be able to use our system in any environment. In a car, a user needs to be able to access our system via mobile device if they want to be able to review the driver on the spot, especially in an emergency situation. However, not every person has a smart device. The elderly, for instance, might have a computer but not a smart phone. This way, a trucker can be reviewed when a user gets home. Furthermore, a website fits our “easy to implement” as well as our “easy to maintain” constraints, and offers portability between devices.