

Interactive Design

Market Analysis for Product - All About Biking

Group 14: Marisa Hoicka, Kylo Xue and Aditi Bhatia

5 products/projects that solve a similar problem (what works, what doesn't?)

1-Google Maps -traffic:

What works:

- Google Maps now accommodates bicyclists through special directions and customizable routes by compiling information about bike lanes and paths, rails-to-trails routes, and determined bike-friendly street routes.
- Google offers one the option of viewing all of the bike-friendly routes.
- One may be able to avoid an area, or to include a more scenic or pleasant option, based on personal preference.
- Sections like: trails, unpaved trails, dedicated lanes, bicycle friendly roads, are available to choose from.
- 3D elevation on geographic features available. The new feature will enable cyclists to see a quick overview of the elevation changes for suggested routes.
- allow users to compare the elevations between multiple routes.
- cyclists will be able to choose the flattest (or, if they prefer, steepest) route.

What doesn't work:

- it doesn't notify quick enough for the user to take safe action
- walking on foot or bike riding has been made more complicated because voice direction aren't as helpful
- listening to music from the same device while hearing directions causes a dramatic change in volume and won't resume music volume to its previous level
- Trail routes don't have auto-traffic feature available. If the type of map requested isn't available, it won't appear on the info card.
- The Google maps app is less concerned with safety -it does not notify the user to unsafe biking corners or parts of the road
- Google maps is not current and up to date when it come to potholes, bike specific obstructions or traffic.

2-Vanhawk bikes

Vanhawks is a “smart” bike for the urban cyclist.

What works:

- The smart bike allows you to navigate your city safely:
- The bike allows you to reach areas without having to look at a map on your phone while you're biking. It's great for navigating specific routes in areas that the user is unfamiliar with.
- The bike has the special feature that it vibrates and lets you know about nearby traffic in the users blindspot.
- It can be used to navigate anywhere that Google maps is used.
- It has theft prevention, if it is stolen and another Vanhawks bike is in a nearby vicinity to it, It will alert you to the location of where your bike is being kept.
- The bike has additional features that track your speed, where you have traveled, distance and calories. It sends this information to your smartphone or pebble watch.
- The bike gathers information on potholes, closed roads and blocked lanes and learns about your neighborhood.

What doesn't work:

- It's connected to a mapping network that does not warn against current construction in the city.
- It does not identify unsafe corners or areas to watch out for

3-Waze app

Waze is one of the world's largest community-based traffic and navigation apps.

What works:

- Waze app claims to deliver its users the best routes, everyday, with real-time help from the other drivers by sharing real time traffic, road-info.
- It helps everyone save time and gas money on routine commute.
- Users are able to contribute to this app by actively reporting accidents, speed traps, other hazards.
- Users are able to find lowest fuel price.
- Waze also makes it easy to keep up with contacts on the go.
- see friend's ETA while driving to the same direction
- when stuck in traffic it updates the user about the back-up routes

What doesn't work:

- deliberately takes users to the toll routes
- no offline maps

- no signal if cloudy
- requires reroute navigation
- no option to save home address or office address in the app, no address book
- notification from the app don't go away even if the app is opened

4-iphone app: Bikemap

Bikemap is an iPhone app that provide road routes for bikers. The interface is a map with markers on various route options. Users can choose the route they desire based on their bike type, route length and rating.

What works:

- The app offers wide selections of bike route to accommodate the users' need. For each of the bike route, there is information on the distance, visual elevation of the map, and rating on the route. There is also a small icon associated with each route to illustrate the shape and area it covers on the map.
- The app offers route collections for you to save the routes you like with comments and rating. Users can also overlap the routes they like, making comparison or emerge the two routes together.
- The app has a follow feature that uses GPS to track your current location in relation to the route you are on. While you are following your trails, the app gives you information on the percentage completion, the elevation of your current location.
- It offers two kind of map views: standard and satellite. Both maps have detailed road information with major traffic in bright colour.
- The design of the app is minimalistic and simple.

What doesn't work:

- This app Lacks customization. Users can only pick existing trails. It is impossible to modify the trail route or create my own route.
- Map is raster instead of vector, which means when you zoom in the map, the text and road can get pixelated.
- There is no social interaction can be made this app. Users will not be able to share the route with other people. Users also won't be able to collaborate with each other to track their miles, or make their own routes. This app does not enhance any social features and is specifically design for one.

5-Map my ride:

Map My Ride is a website that provides numerous trail rides in your neighbourhood area. Mainly cycling trails. It also allow the users to enter their own personalized trails onto the website and share with others.

What does work:

- It allows the user to create a customized trail for bike, jogging route. It also provides information on the distance and elevation of the road. On another hand, user can find pre-existing routes in their city and neighbourhood area. There are also great amount of information on the route for the user to get a concrete understanding.
- The social media feature of the website is well integrated. The users can be able to share their routes with others on facebook, twitter and even through phones. It also has scoreboard and achievement system for user to engage in competitive activities on the routes.
- The website has a clear affordance. It also provided intuitive visibility for the users. The overall layout design and colour choice are user friendly. I was able to navigate myself without any tutorials.
- The website has enhanced map viewing system that allows users to choose different map types, markers, and bike paths. This Creates flexibility to accommodate various user preference.

What doesn't work:

- When the application connects the two point you have selected. It sometimes provides you an incorrect route, or a detour. The user then needs to click each point at smaller distance to ensure that the route connection is what they wanted.
- The website has features that are excessive. It offers Food and workout plan on top of its trail route services. These features do not have direct impact on the major feature. They just add additional functionality to the website. From a user perspective, and more steady gestures.
- Uploading and accessing of information is limited to its platform (website). User are only able to access the website with the availability of internet and computer.

6-paper Map

Paper map is the traditional resource for navigation. the roads and sites are printed in colour/black ink on a poster sized piece of paper.

what works:

- no electricity, internet or satellite needed to access the map.
- no Hardware device/platform needed.
- does not require battery, can last long with careful preservation.

what doesn't work:

- outdated. does not update road information at all. customers need to make separate purchase if they want updated version of the map
- no navigation
- no search functions. people need to find the road/location manually.
- not water resistant. the map can be ruined with water contact.
- does not offer customization, not “intelligent”. users cannot create their own personal paths, calculating the distance, nor find the shortest transit.

5 products/projects that use the platform you want to use successfully (what works, what doesn't?)

1-Waze app

what works:

- Waze is available for apple, android, and windows phone.
- new improved voice guidance
- notifications provided when the GPS signal is lost
- has a cop alert

What doesn't work:

- drains battery of the device
- app fails to switch from wifi network to mobile network, and losses connectivity, have to toggle to airplane mode on and off to make the app work
- no information on railroads crossings in the latest version of the mobile app
- doesn't integrate well with the other apps
- doesn't have an option to turn off some sounds while keeping the voice guides on.
- ”share” button on the app covers the zoom out button
- too many notification, causes distraction while driving such as: constantly alerting about the cars on the shoulder

2-Vanhawk Bike

What works:

- Allows you to navigate safely
- Allows you to reach your destination without having to look at a map after you place the initial destination request into your phone.
- Special features that vibrate and let you know about nearby traffic. (blind spot detection)
- Everything is pre-built into your bike, minimal to no set-up required.

What doesn't work:

- Expensive, only for a particular niche market \$1300-\$1600 (the average cyclist likely can't afford this.)
- This is not a bike you can lock outside, limits the destinations or how you use it.
- It only works on this style of bike, the user has no choices in terms of the type of bike or any selection of styles.
- The user might become dependent on the safety vibration feature (they don't physically look to see if there is traffic)
- It's connected to a mapping network that is not current
- Theft prevention only works if someone else with a Vanhawk bike is in the same vicinity. –This only works if a community purchasing this bike has formed, without it, theft prevention doesn't work.
- Because the entire bike is "smart" and since digital technology is constantly evolving, the "smart" side might not be functional a few decades from now leaving a less appealing antique bike for future users.

3-Helios Bike Lights

Helios is a "smart" handlebar with attached lights for your bike.

What works:

- The handlebars have safety bike lights, for both the front and rear of the bike.
- Rear LED's function like a turn signal on a car to notify drivers behind you of the direction you are turning.
- The LED lights are very bright which helps to safely warn vehicles, other bikes and pedestrians on the road.
- Some of the features can be controlled without a smartphone, while other features need a smartphone to work
- The lights can be recharged either using a usb inserted in a computer or come with a power adaptor

What doesn't work:

- The handlebars are expensive. They cost \$279 plus shipping.
- The user has to replace their current handlebars and Helios has limited styles, colours and choice in terms of aesthetics.
- Helios handlebars and features cannot be installed on all bikes.
- The user either has to pay someone to install it or have the skills and tools necessary to install it themselves.

- The battery life on the lights are 9 hours, which is minimal compared to most other bike lights.
- It doesn't show users a current and up to date map of the cities potholes, construction or road blocks
- The handlebars do not yet work with Android phone.

4-Google maps:

What works:

- The Google Maps Smartphone app consists of voice directions.
- Users either need a computer or smartphone to check routes and do not need to purchase any additional features or equipment.
- Google maps is free to the user
- notifies user about constructions and detours
- users are able to pre-download the map of any city

What doesn't work:

- needs faster user Interface, and better tracking/orientation
- voice guide is available but doesn't seem to work efficiently
- removing the zoom button from the app is not much appreciated by the users
- GPS signal gets lost very often
- maps constantly crash even when the network is available
- Users have to either memorize routes to their destination or regularly check their phone to make sure that they are going the right way. This is inconvenient to users and dangerous to do while in the act of biking.
- While Google maps has an audio feature that will tell you how to navigate and where to turn your bike through your headphones, wearing headphones while biking is dangerous and distracts the cyclist from paying attention to traffic.

5-GPS unit -Garmin

The Garmin GPS (Global Positioning System) tracks the user's exact location and displays it on the electronic map. User can choose a location on the interface, the GPS will choose the best road option for the user between their current location and their destination. Then visually and audibly guide the user to reach their destination.

What does work:

- Provide route guides to the user to reach their destination. It can also correct and adjust the route when user does not follow along the guide.


- Visual and voice guidance for the user. This ensures that the user does not miss any information the GPS provided and be able to drive undistracted and safely.
- The GPS is high in accuracy and has no latency in updating user's profile. Better than most phone apps and computer application, the GPS keeps tracks of the user's currently location with less delay.
- 3-D Buildings & Terrain depict landmarks and the natural landscape. Give the users special sense when travelling. It also tracks the users' travelling speed and the road speed limit.

What doesn't work:


- There is no terrain map integrated into the GPS unit, only available map is standard road map. The map is less user friendly than google maps due to it's colour choice and label system.
- The unit is costly compare to phone apps and web application. One unit can cost between \$150 to \$700 compare to the fee open-source application.
- Each individual unit is also space-consuming. Even though the GPS comes in different sizes, user need to handheld it separately. It also requires charger or battery.
- The map is not customizable. Users cannot add their own locations or markers.
- users are not able to share their route with others. the unit does not enable social interaction between users.

Personas for Product - All About Biking

4 personas have been identified for our products, which are: middle school students, university students, middle age working class and retired seniors. We feel that these groups best represent our user base because they all have relatively strong and unique needs. The personas are listed below:


Persona 1	Middle School Student
Introduction	12 to 15 years old Just before the age of obtaining drivers' licence. Equal amount of male and female
Photo	 <p>By Masvingochick (Own work) [CC-BY-SA-3.0 (http://creativecommons.org/licenses/by-sa/3.0)], via Wikimedia Commons</p>
Fictional Name	Cindy Smith
Professional	Grade 8 Student studying at J.S Junior High. No professional experience
Demographics	Female 13 years old Youngest of a four person household Middle income family Caucasian
Goals and Tasks (Background)	Cindy is a middle school student who just turned 13 this year. She comes from an average household where she lives with her parents, her brother and a dog. As she hits 12, her parents no longer pick her to and from school. She does not use school bus and instead she walks. The travel time between her school and home is approximately 10 minutes. Cindy also spends most of her time walking to various destinations, such as shopping mall, friends' homes and library. She feels her commute method is very time consuming and inefficient. As an alternatives, Cindy decides to travel by bike. This way she can exponentially reduce the travel time and spend less effort. Her parents, on another hand, are concerned for her safety on the road. Biking means a faster speed and

	broader travel distance. It is the least thing they want for their daughter to get hurt or lost.
Environment	Cindy is comfortable using computers and electronic devices. She spends a lot of her leisure time interacting with her friends on social media platforms from both phones and laptops. She uses her phones extensively to play games, talking to her parents and friends and checking the latest news. She is not particularly athletic but knows how to ride a bike. She had previously participated in couple school sustainable development projects and activities.
Quote	“It only takes 3 minutes to bike to school and I will be able to go to places on my own. I don’t feel it is necessary, but my mom is really worried for my safety, and she needs some aid to help me keep on track when I am traveling on my own.”


Persona 2	University Student
Introduction	18-24 years old Higher percentage are male, according to stats can female cyclists are on the rise. Currently attaining post secondary or more post secondary
Photo	 <p>福州中学生骑车族玩\u201c死飞\u201d+刹车难险象环, July 26 2014, fzlktv, (http://www.fzlktv.com/zphoto/201407/26/133203.html)</p>
Fictional Name	Leslie Chan
Professional	Limited to no professional experience. –Has just started or is in training. Studying a variety of different types of courses. She will use this app because she is looking for: safety, fastest routes to class, staying safe during various weather conditions.
Demographics	Political Science Major Age 20 Studying Post Secondary Chinese-Canadian immigrant, Single

Goals and Tasks (Background)	<p>She is trying to get to class or other engagements in a short amount of time and safely.</p> <p><i>User Motivation:</i></p> <ul style="list-style-type: none"> -Motivated to get places fast. -Motivated to arrive safely. -Students are low-income and are motivated to use inexpensive or free products.
Environment	<p>-Her physical environment is the urban terrain, mostly hangs out with other students but has some friends and family of other ages. She is surrounded by current technology, has a smartphone, computer and so do all her friends.</p> <p><i>Technical:</i></p> <ul style="list-style-type: none"> -Use smartphones, ipads and computers on a regular basis. -Uses and is knowledgeable about a wide variety of software and apps. -Primarily uses their smartphone and then their computer to access the web. Spends many hours on these devices for homework and leisure.
Quote	<p>"I want to know which streets are blocked off before I leave on my journey, I'd like to get to class or arrive to hang out with friends fairly quickly. I would love an app that can locate these problems and help me quickly navigate any detours I might have to take. I don't have enough time to constantly be stopping my bike and looking at maps on my phone.</p> <p>I'm also really concerned with potholes and the constantly changing weather. Being alerted to black ice or heavy rain would be amazing!!!</p> <p>My friends and I are always texting each other and we ride around the city together in the evening. I love how social biking can be and wish we had a bigger community to relate biking blockades and tips to one another."</p>

Persona 3	Professional
Introduction	<p>25-55 years of age</p> <p>Male/ female</p> <p>Upper middle class professional holding a White collar job</p>

Photo	
Fictional Name	Julio Ramirez
Professional	Computer Science Major From Silicon Valley, California, USA Software Engineer Professional – 7 years of experience in the industry
Demographics	Male Age 29 Married with 2 toddlers Latin American Heritage \$85,000/year (Upper Middle Class) Wired through digital technology 15+ hours/ day (approx.)
Goals and Tasks (Background)	Being in IT industry, the professionals have to spend their day in office in front of a computer screen. Physical movement is very minimal, which often causes itchy/red eyes, body stiffness, and neck-backache. Therefore, having a routine of physical workout is very significant. But long hours at work, and then responsibility of family and young kids does not leave enough time in the day to go to gym. Hence, such an individual would prefer a workout routine that is embedded in the everyday essential tasks. As a result, the goal of the young professional is to commute to the work in a healthy and environment friendly way as well as save money on public transportation. Additionally, being in the enclosure of a building weather work or home is not much appreciated by the individual and wants to experience the fresh air as well.
Environment	He lives in the core downtown at 35 Carlton Ave, Toronto, the intersection of Yonge-College street, and works at Lakeshore. The distance between his workplace and home is approximately two kilometres. It takes him around seven to ten minutes to cover that distance by bicycling. Being an IT professional, the user is very affluent with digital interfaces. The user is update to date about all the latest apps in the market, as well has all the latest gadgets such as a tablet, a smartphone that he operates

	through the wrist watch, always hooked with Bluetooth headphone/microphone device.
Quote	<p>"I don't want my profession to cost onto my health, therefore I want to embed healthy commute practices into my everyday routine."</p> <p>"Besides being a health watcher, I would also want to contribute to health of environment as well by embracing eco-friendly commute option."</p>

Persona 4	Retired Hobbyist
Introduction	<p>60+</p> <p>Male and Female</p> <p>Highest level of education, post secondary</p>
Photo	
Fictional Name	Arthur Gould
Professional	<p>Decades of work experience.</p> <p>Varied professional background, someone who has worked with computers.</p> <p>Users are more likely to access the site from a computer, a limited number of users will use smartphones.</p>
Demographics	<p>Retired English Teacher</p> <p>Age 66</p> <p>Masters level education</p> <p>White</p> <p>Father</p>
Goals and Tasks (Background)	Leisure cycling in the city is his new hobby and he wants to travel through the urban landscape safely.

	<p>They would use the app for recreational rides through the city and sometimes when running errands or visiting friends.</p> <p>They need an app that is easy to use and not very complicated. It should have core functions only, not too many choices, and no bells or whistles.</p> <p>User needs: Safety!!!</p>
Environment	<p>He lives in an urban area, has many retired friends and his children keep him in the loop in terms of technology. He also used a computer for work before retiring and while he doesn't use it as many hours as he used to he continues to use it each day.</p> <p><i>Technical:</i></p> <ul style="list-style-type: none"> -They would have to at least use a computer or smartphone on a regular basis. -They have a limited use of software and applications. -Their primary device is a computer, and they browse the computer for a limited amount of time daily, 1-3 hours. -Motivated to arrive safely.
Quote	<p>"Having recently retired I was looking for hobbies to throw myself into, having previously cycled to work every day I thought I would keep active and discover the city through planning regular bike rides to see various locations.</p> <p>This has allowed me to stay fit, keep connected to my children and I use both the navigation and safety parts of the app to allow me a safe and barrier free route. I'm never in a rush and have more time to explore longer routes."</p>

Work Cited

<http://mashable.com/2014/07/18/google-maps-cyclists/>

<http://gps.about.com/od/gpsmapscharts/a/google-maps-bicycling-directions.htm>

<https://support.google.com/maps/answer/3092439?hl=en>

<https://www.waze.com/>

<http://www.mapmyride.com/>

<http://www.ridehelios.com/>

<http://www8.garmin.com/aboutGPS/>