



# Beacon

Mobile App Case Study

Casey Johnson : 2017



# Problem Statement

The problem is that mountain bikers coming from other towns to explore a new area/city sometimes find it difficult to find good trails and riding areas. Working at a bike shop part time, I get asked "what is a good route to take?" It is very difficult to explain to someone how one ride that I prefer is better than the next without SHOWING them personally. I want to create something that will solve that by helping riders get connected with locals with good knowledge of local trails/road routes. This way, riders have a better experience when visiting a new region or city.



# High Level Objectives

The objective of Beacon is to encourage and facilitate travel to new and strange/fun/unique riding destinations...all while saving time and staying safe..BY being led by someone that has intimate knowledge of selected trail systems. We want to encourage social riding and learning new skills while removing the fear that riders experience when exploring new trails. And, it will be FREE!



# How Beacon works

Beacon works in real time to connect riders who are out in the environment. It enables riders to confidently tackle the unknown with the help of someone who already has intimate knowledge of the trail being explored. Or riders can lead others in their area who may want to explore.

**1** The rider opens the app and clicks FOLLOW

**2** The app locates the rider and serves up a list of Beacons

**3** Beacon and rider connect and conquer the trail together





# Approach

## Research

User interviews  
Data Synthesis  
Personas  
Competitive Analysis  
Problem Statement



## Design

User Flow  
Site Map  
Sketches  
Wireframes  
Prototype  
User Testing/Revisions



# Quotes

## Ever been Lost?

"Once, in North Carolina yes. I didn't have an idea of what I was getting into and ended up pushing my bike for 20 miles and having to wade across four waist deep freezing rivers. It took literally ALL DAY!"

## How do you find new trails?

"Reach out to a local or go to a shop and ask for maps."

## Would you find it helpful to have an experienced guide when exploring a new area?

"ABSOLUTELY!"

## How important is the experience of riding to you?

"It is the most important thing"

## What was the worst experience you had when exploring a new trail? And how badly did it go? Were you able to salvage the ride?

"Getting lost on the south trails in Austin. Only difficult because I had a flat and ran out of water and had to be picked up. Pretty embarrassing, to say the least."





# Research/Interviews

## Participants:

Interviewed four really good riders who all travel frequently and sometimes travel specifically to explore new mountain bike trails in remote areas. Age ranges were from early 20s to 50s.

## Research Goals:

Learn what issues riders have when exploring new trails

Learn what would help elevate the experience and empower them to want to explore more trail

## Method:

4 twenty minute in-person interviews



# Interviews

## INTERVIEW 1

**Dan**

**Where do you like to ride?**

Walnut Creek (mtb trail)

**What is your level of expertise/fitness level?**

Average

**How often do you ride?**

Once per week

**What was the worst experience you had when exploring a new trail? And how badly did it go? Were you able to salvage the ride?**

A time at Kincaid Lake, hot, exhausted, out of water - was able to salvage, and was a learning experience

**How do you find new trails?**

Asking peers, exploring off normal paths

**Would you find it helpful to have an experienced guide when exploring a new area?**

Yes

**Are you afraid to get hurt or lost if you are in a new area?**

Slightly, always a concern

**Have you ever gotten severely lost?**

No, wasn't ever something that couldn't be figured out

**Do you have a smartphone with GPS? Do you use a Garmin or any other type of tracker?**

No, not for navigation

**How excited are you about exploring new trails?**

Very excited

**Would you pay for an app or service that would connect you with a guide or local?**

Yes

**Do you like to ride with others?**

Yes, nice having company and learning from others

**How often do you travel to other areas specifically to ride mountain bikes?**

Twice a year

**Do you prefer maps or having someone lead you?**

Leader, because they know the trail.

**How important is the experience of riding to you?**

Very. I've been on a bike my whole life. Bike riding defines me, and every experience is always great.



# Interviews

## INTERVIEW 2

Kevin

**Where do you like to ride?**

Road and mountain

**What is your level of expertise/fitness level?**

Experienced

**How often do you ride?**

5 times per week

**What was the worst experience you had when exploring a new trail? And how badly did it go? Were you able to salvage the ride?**

One that ends in a dead end/not as much trail as first thought it might be

**How fulfilling is it when you find a way in and out of a new trail?**

Very fulfilling

**How do you find new trails?**

Internet/message boards/strava/trailforks/mtb project

**Would you find it helpful to have an experienced guide when exploring a new area?**

Personally, no, but if it were in another country, yes

**Are you afraid to get hurt or lost if you are in a new area?**

No

**Have you ever gotten severely lost?**

Yes, 10 years ago before cell maps

**Do you have a smartphone with GPS? Do you use a Garmin or any other type of tracker?**

Yes, both phone and Garmin gps

**How excited are you about exploring new trails?**

Very excited

**Would you pay for an app or service that would connect you with a guide or local?**

Maybe, but probably no

**Do you like to ride with others?**

Sometimes, yes...sometimes, no - depends on who it is

**How often do you travel to other areas specifically to ride mountain bikes?**

Not often

**Do you prefer maps or having someone lead you?**

Maps, bc of independence and not depending on others

**How important is the experience of riding to you?**

Very important bc of scenery, weather and trail conditions



# Interviews

## INTERVIEW 3

**Jonathan**

**What is your level of expertise/fitness level?**

Experienced

**How often do you ride?**

6 times per week

**What was the worst experience you had when exploring a new trail? And how badly did it go? Were you able to salvage the ride?**

Getting lost on the south trails in Austin. Only difficult bc he had a flat and ran out of water and had to be picked up

**How fulfilling is it when you find a way in and out of a new trail?**

Very fulfilling

**How do you find new trails?**

Reach out to a local or go to a shop and ask for maps

**Would you find it helpful to have an experienced guide when exploring a new area?**

Absolutely

**Are you afraid to get hurt or lost if you are in a new area?**

Always a concern but not a stopper

**Have you ever gotten severely lost?**

Not enough to worry. Overshot a turn by 20 miles and it turned a short ride into a 115mile slog at 114 degrees

**How excited are you about exploring new trails?**

Really excited

**Do you like to ride with others?**

I prefer company

**How often do you travel to other areas specifically to ride mountain bikes?**

2 to 3 times per year

**Do you prefer maps or having someone lead you?**

I would prefer being led

**How important is the experience of riding to you?**

Crucial

**Would leading a new rider on a trail you're familiar with be something you're interested in?**

For sure. I love showing our local trails to newbs and watching them discover something for the first time.

**If something went wrong, are you apt to help someone in trouble?**

As a mechanic, I'd have to say yes. It's in my nature.



# Interviews

## INTERVIEW 4

**Will**

**What was the worst experience you had when exploring a new trail? And how badly did it go? Were you able to salvage the ride?**

Once, in North Carolina yes. Didn't have an idea of what he was getting into/ended up pushing bike for 20 miles and having to wade across four waist deep freezing rivers

**How fulfilling is it when you find a way in and out of a new trail?**

Not overly so

**Would you find it helpful to have an experienced guide when exploring a new area?**

Of course, that could never be bad

**Do you have a smartphone with GPS? Do you use a Garmin or any other type of tracker?**

No because it is a distraction

**Do you like to ride with others?**

Prefers small groups

**How important is the experience of riding to you?**

It is the most important thing

**Would leading a new rider on a trail you're familiar with be something you're interested in?**

I'd have to say yes. As someone who has been lost, and in need of help, I'd always be up for showing someone new stuff

**If something went wrong, are you apt to help someone in trouble?**

As always, yes. That is a must to help out fellow mountain bikers



# Key Findings/Research Results

## User Goals and Motivations:

- Exploring unfamiliar trail
- Being led by someone with intimate knowledge of trails and difficult trail interchanges/features
- Not being lost
- Having a great experience
- Staying safe
- Getting home on time
- A curiosity for “hidden/secret” trails that only locals know

## Pain Points:

- Digital aids such as phones and GPS units are distracting and can run out of battery power/internet connection
- Getting hopelessly lost
- Unfamiliarity with a new place
- Missing trail markers
- Incorrect/Old maps

During research, I've found that the experience of riding and exploring new trails is the most important and fulfilling aspect a rider can achieve. Most riders, during my research don't view rider aids (GPS, iPhone Maps, Paper maps, Phone apps) as a huge plus, but more of a hindrance or distraction. Almost all said that a guide would be a great addition to their experiences.



# Personas (Follower)



## Will:

Age: Mid 40s

Experienced rider/not TOO experienced

Single dad

Professional Designer

"I don't travel specifically to ride trails often, but when I do, I don't want to waste time getting lost. I want to have a great experience, but my somewhat limited skill and time make it important to maximize my time and energy. I'd hate to not make it home to the kids for something as dumb as getting lost."

## Concerns/Frustrations:

- Getting lost in a new area is the worst experience and is pretty embarrassing
- Is afraid to get hurt if out riding alone
- Fear of running out of food and water is a constant concern
- Overshooting turns in a new area can lead to disaster
- Dead end trails
- Being led by someone who is, himself, lost

## Feelings:

- Is excited to explore new trails when travelling or just at home
- Feels riding is the most important thing in life, except for his kids
- Has had the best experiences all on two wheels

## Goals:

- Reaching out to locals when exploring new areas
- To learn from others during every riding experience
- Ride in small groups when possible
- To have help when exploring
- Travel to ride 2-3 times per years
- To get the MOST enjoyment out of limited time to ride

## Summary:

Will grew up in a small town and near a national forest. His parents always fostered his love for bikes and made sure he had a nice bicycle. They also pushed him to spend time outside, riding and enjoying the outdoors. The forestry service there built a trail in the woods for people to ride once the popularity of mountain bikes exploded.

Once, as a kid, while out exploring that new trail, he got lost, had a flat and had to walk out of the woods very late at night and alone.

Growing up, he spend more time riding and helping maintain the trails thereby galvanizing his love of mountain biking and exploring.

After college, where he majored in design, he moved to a bigger city. His career and kids took precedence over riding but he still kept up with it and the latest trends in cycling. Travelling to new riding destinations is a hobby of his, but finding good maps and directions proves to be difficult. He doesn't value getting lost after once overshooting a turn and putting himself into real danger. The experience changed him and now he values riding with a guide or local when exploring new areas.



# Personas (Leader)



## Kevin:

Age: Mid 40s

Expert rider with 20+ years of experience

Married

Bike shop mechanic

**"I have guys coming in to the shop all the time wanting to know where the best trails are or what the best road route is. I ride 6 days a week and routinely catch people on the trail that have broken down or flatted or worse, are hopelessly lost."**

## Concerns/Frustrations:

- Getting the word out to new riders in his shop
- Seeing people who are lost or hurt
- Spreading the gospel of mountain biking
- People being turned off to riding new trails

## Feelings:

- Is very interested in guiding new riders while he himself is out riding
- Aside from food, bicycles are what drives his every move
- Has experienced more on bikes than most people have on two feet

## Goals:

- Being a full time trail steward
- Helping others and dispelling myths about biking remote areas
- To ride in small manageable groups
- Meet new people

## Summary:

Kevin is from a big family. He grew up with his dad being a car mechanic and learned the trade very early. His father instilled in him a willingness to help people whenever possible. He goes out of his way to help those in need.

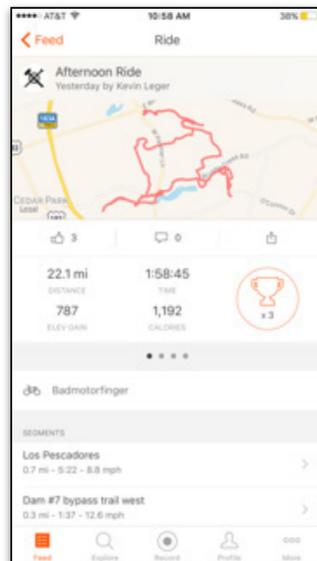
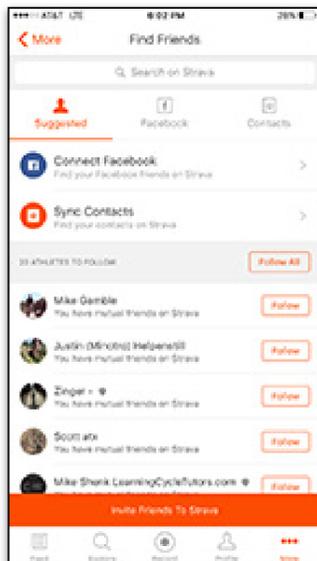
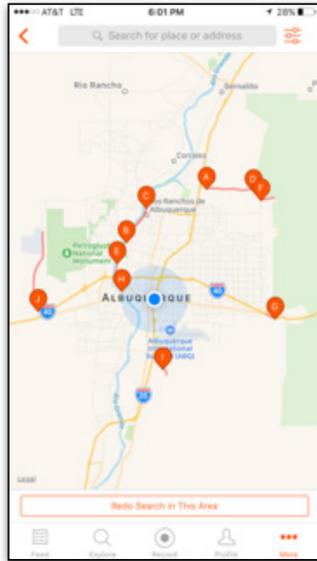
Kevin has spent over half his life working with and around motorcycles and bicycles. He has toyed with the idea of opening his own shop or guide service but lacks the time to dedicate to becoming a business owner. He has spent time as an amateur racer in college and is accustomed to the physical suffering it takes to log long miles on a. Mountain bike in remote areas of the country.

Working in a bike shop full time as a mechanic has opened his eyes to the possibility of helping more people discover more trail and he has intimate knowledge of TONS of routes. His expertise in route making and technical knowledge is a huge help to him and those around him.



# Competitive Analysis

## STRAVA



### Overview:

- Competitor exists bc there is a need for a social competitive sharing website with a ride logging feature
- Problems solved are social networking and sharing as well as data logging for trails

### Strengths:

- App and desktop website available
- App is good looking and has strong UI, fairly easy to use
- Social competitiveness is a strong aspect
- Shows many trails and features a heatmap (most recent/most ridden trails and routes)
- Free download
- Reward system consisting of 'personal bests' and 'King of Mountain' medals when user is fastest over a certain segment of trail/road route
- No in app ads

### Weaknesses:

- Competitor does well, but there is no connection of a rider and a 'guide'—rider/user is responsible for either logging a ride or following a map on their own. There is a 'find friends' feature but no live user/rider 'same location' feature
- Privacy can be a concern
- Discrepancy in features between the free version and the pay for premium version
- No live connect to a guide feature

### Opportunities for improvement:

- Adding the connection of guide to rider feature
- Adding features to free version

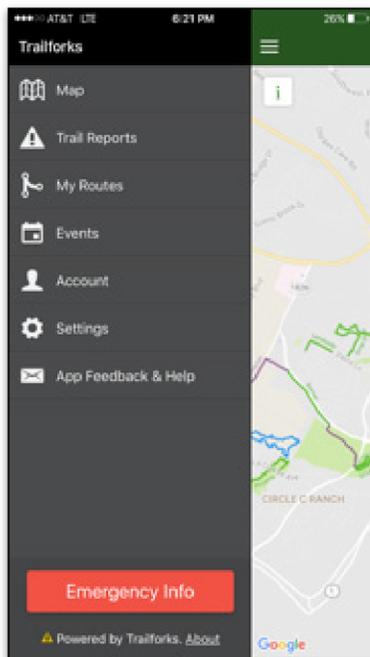
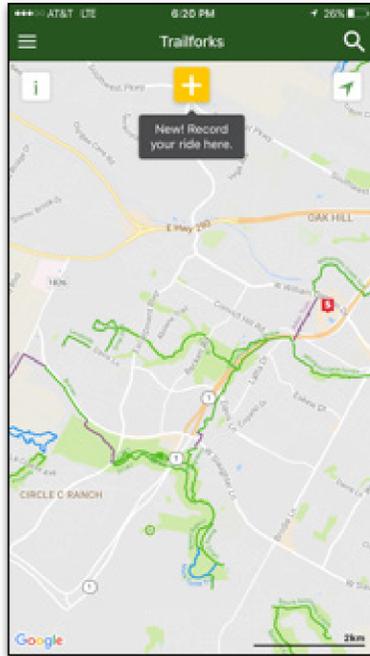
### SUMMARY

Stravas 'hook' is competition between riders. They get great reviews but have issues with privacy. Some users report issues with features that aren't available. Some feel the cost for the 'premium' version of the app is too high and limits features from the free version.



# Competitive Analysis

## TRAILFORKS



### Overview:

Competitor exists in the market bc there is a need for reliable maps that function through a phone or GPS without having to be connected to a cell signal or wifi

### Strengths:

- TF does well at housing good maps and trail ratings
- Reliable maps that always work as long as your device is charged, no need to be connected to internet
- Branding is strong and app is cohesive and pretty
- Free download
- Can submit your own suggestions for changes to trail maps
- No ads

### Weaknesses:

- Does a bad job of logging and showing ALL the trails that actually exist. As a rider of many of the local trails in my city, I know for a fact that a great many of the trails that actually exist don't show up on TF's maps (example below) -in this shot I know for a fact that the area is criss crossed with TONS of trails that aren't showing up here.
- Downloading maps for particular area can be confusing
- Not possible to 'live connect' with a trail guide person
- App takes a while to load

### Opportunities to improve:

- Reaching out to riders (they are at over 500K downloads to date) that are members or data loggers on the app to ride more and log more of what is actually out there. And maybe add more of a social function.

### SUMMARY

Trailforks is a great app with pretty good reviews. Still no rider connection options.

(source: app picker -

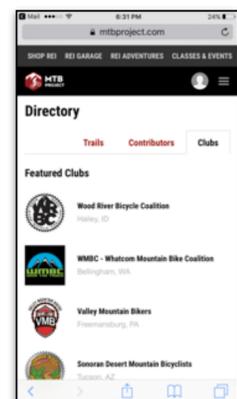
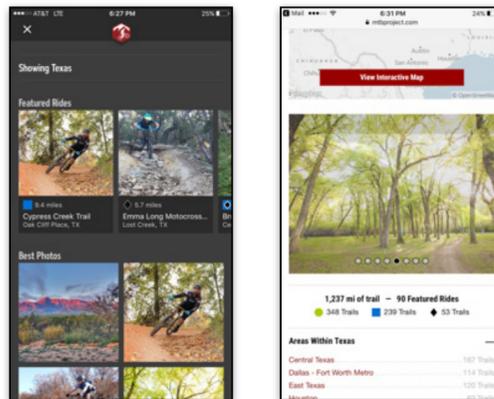
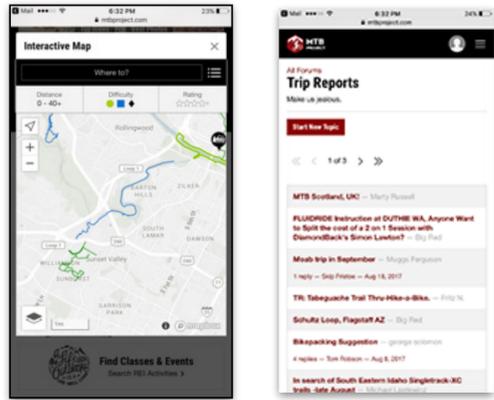
<http://www.apppicker.com/reviews/26664>

/trailforks-app-review)



# Competitive Analysis

## MTB PROJECT



### Overview:

Competitor exists in the market bc there is a need for reliable maps that function through a phone or GPS without having to be connected to a cell signal or wifi. Need for more rider focused reviews and curation.

### Strengths:

- Solves problem of reliable maps as well as rider curated trail experiences that are shared through the app (2nd pic shows trip reports and 3rd/4th pics show curated ride with pics)
- Reliable maps that always work as long as your device is charged, no need to be connected to internet
- Branding is strong and app is cohesive
- Free download
- Cool directory feature that houses trails contributors and clubs

### Weaknesses:

- MTBP does a good job of putting faces with the riders but still no live connect feature - has a lot more content and features than the other two competitors
- Too busy feeling

### Opportunities to improve:

- Make site simpler looking. Cut down on the busy feel of the page
- Add a live guide hookup feature

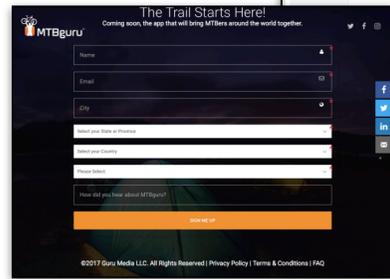
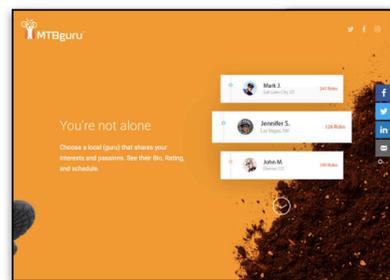
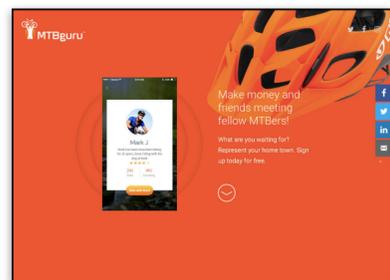
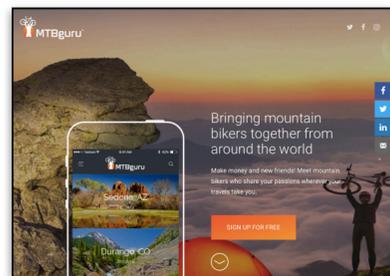
### SUMMARY

Trailforks is a great app with pretty good reviews. Still no rider connection options. Free download option is great. Site needs to feel less hectic



# Competitive Analysis

## MTB GURU



### Overview:

Competitor exists in the market bc there is a need for riders to secure a guide.

### Strengths:

- Fairly easy to navigate the site
- Straightforward and simple
- Can make money while being a guide
- Guides are experienced in emergency situations and are also experienced mechanics. Also certified in CPR.

### Weaknesses:

- Legal issues concerning making money in national forests
- Some users on forums seem to dislike the idea of using trails for gain
- Cant tell if app or site actually is in business as I signed up but have received no email

### Opportunities to improve:

- Dont require 'gurus' to be certified
- Dont charge users
- Dont require 'gurus' to charge a fee for being a guide
- Create a 'live guide' feature to connect riders

### SUMMARY

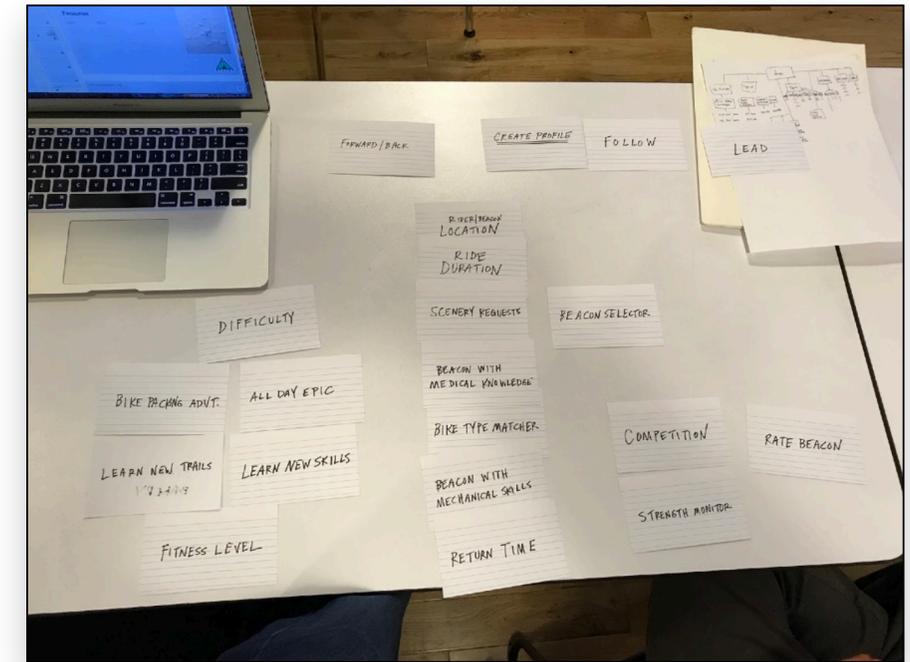
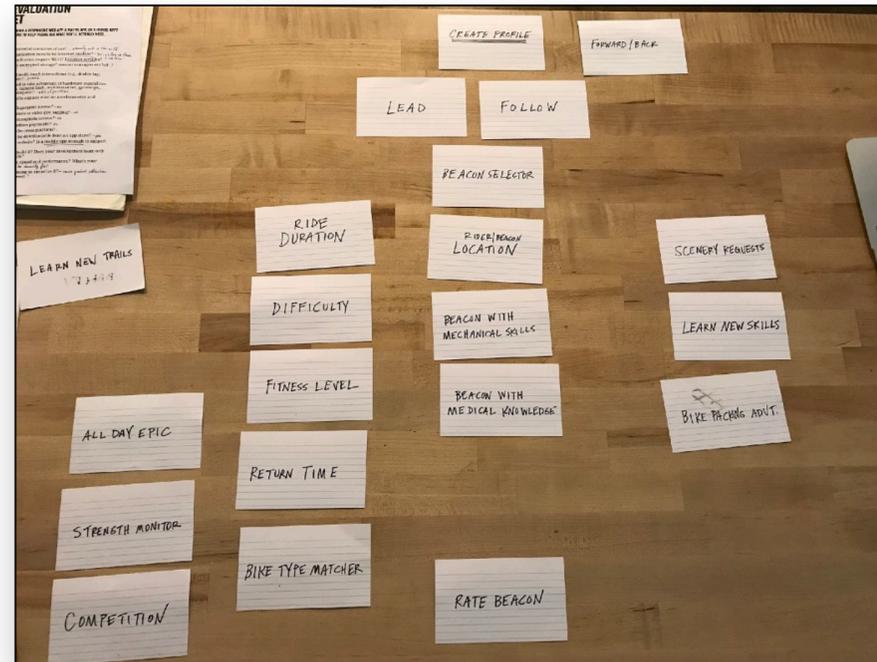
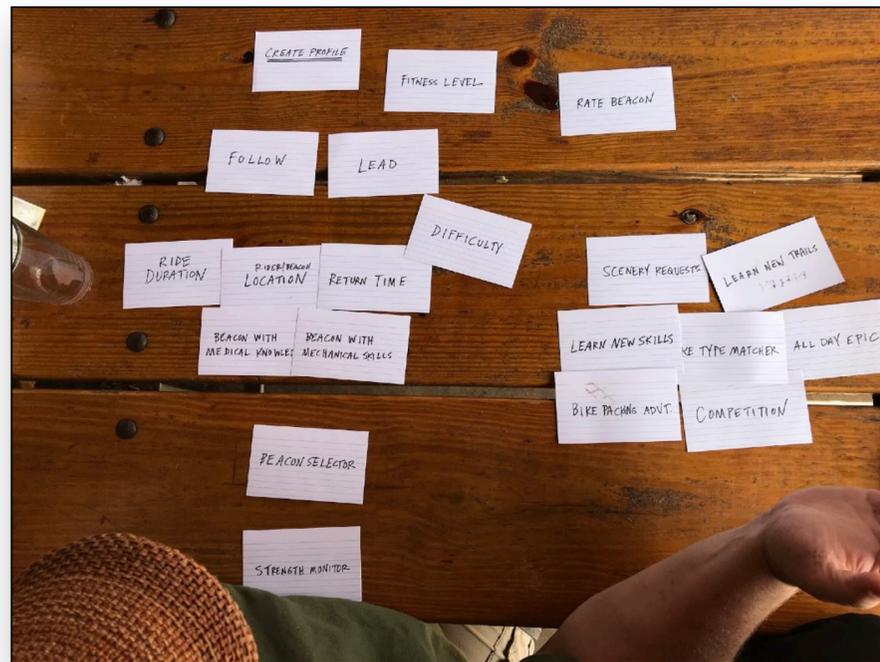
The website is pretty, but I cant quite find the app version available for download. I signed up to be a guide, but for me personally, and from what I'm reading on mtbr.com, there seems to be some negative feelings and legal issues about making money in a national forest. To do that, the 'guru' would have to become certified and take CPR classes. My service would be a little more 'wild west' than that and be a little akin to meetup.com. My 'beacons', as it were, would not be allowed to charge for their services. As mountain biking is my passion and the fact that I have a heart of service, I would not be ok with charging money for showing someone something new AND I'm already doing it so I'm not exactly going out of my way. THE MAIN DIFFERENCE is that my beacons would already be out riding, not going to an appointment. Users would click a release waving the ability to sue if an accident were to occur. "Beacons" would not be liable. Therefore making the issue of legality and 'yuck' that some people feel about a service like this charging for guiding a non issue.

### quote from mtbr.com

I often find myself in strange new places where a guide/service like this could be great. On the otherhand, I'm dubious about the overall idea here. Who pays the ticket when your guide takes you on unsanctioned trails? How will this not encourage more "sekret" trails? Hate to be negative about an idea I'd make use of myself, but this has all the potential of default public heatmap contributions in strava. Hope I'm wrong.



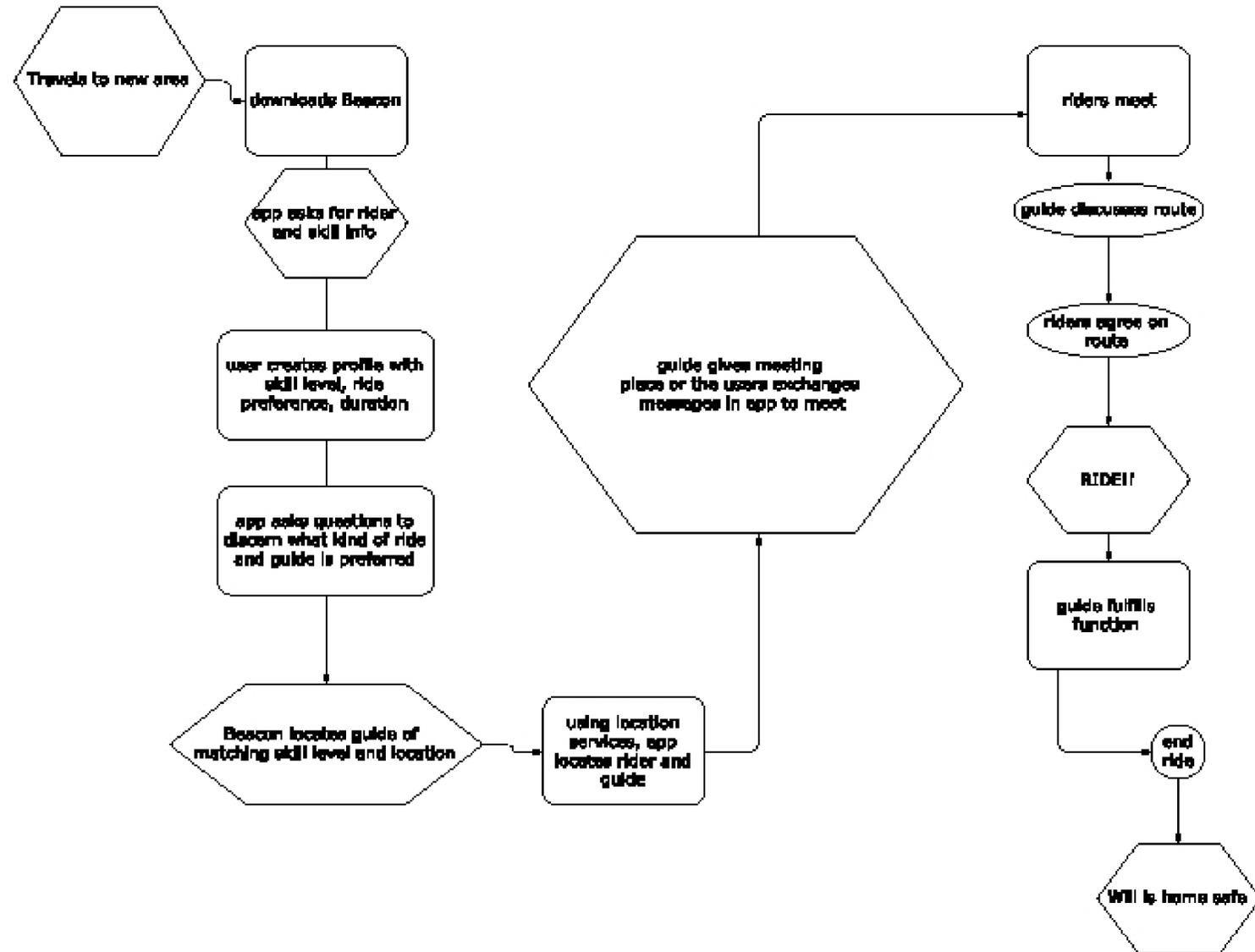
# Card Sorting



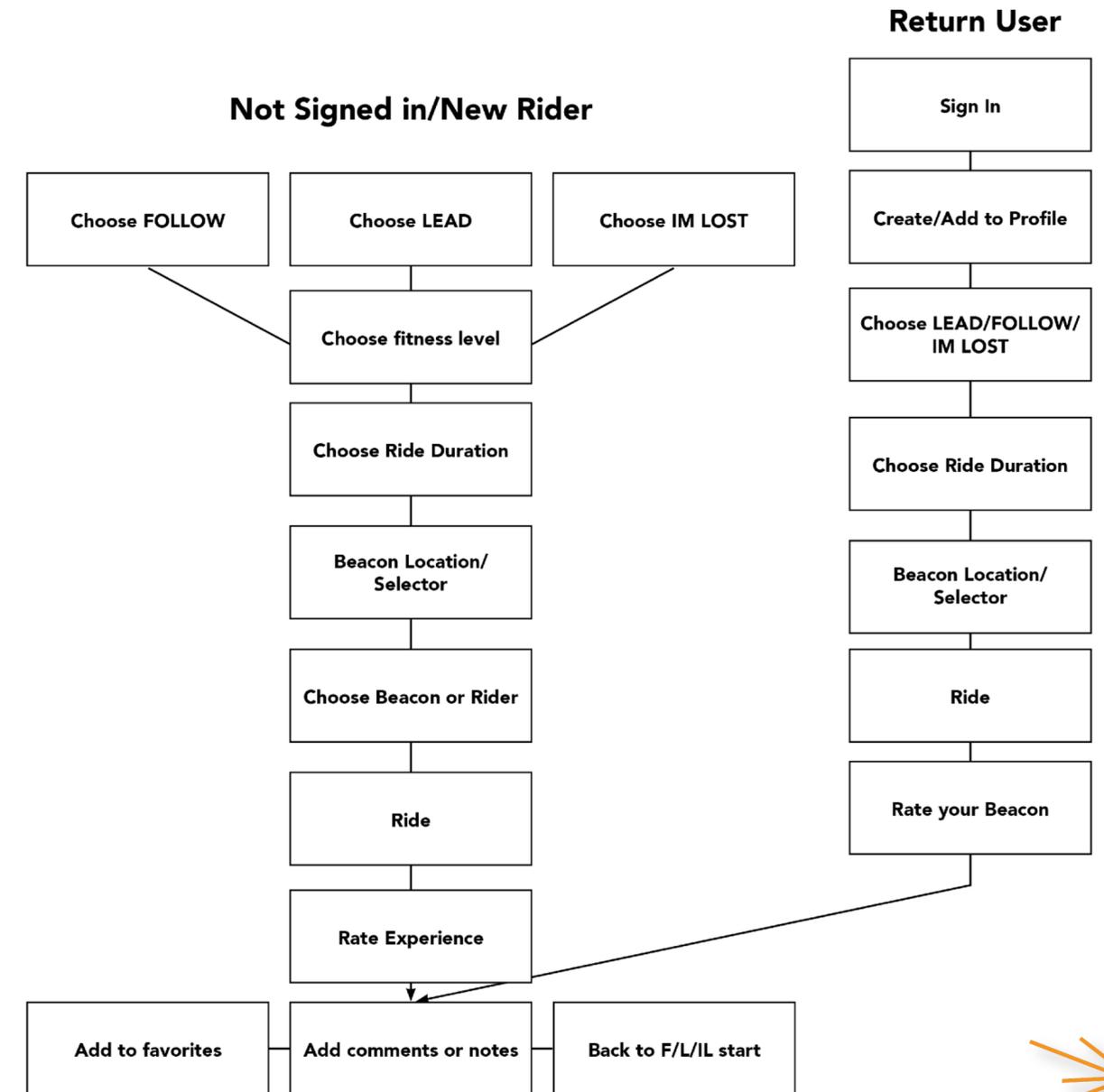
Card sorting went almost perfectly. All three people, though they sorted a bit differently each time, sorted pretty much the way I felt the hierarchy should look.



# User Flow



# Site Map





# Now/Next/Future Mapping

## Now

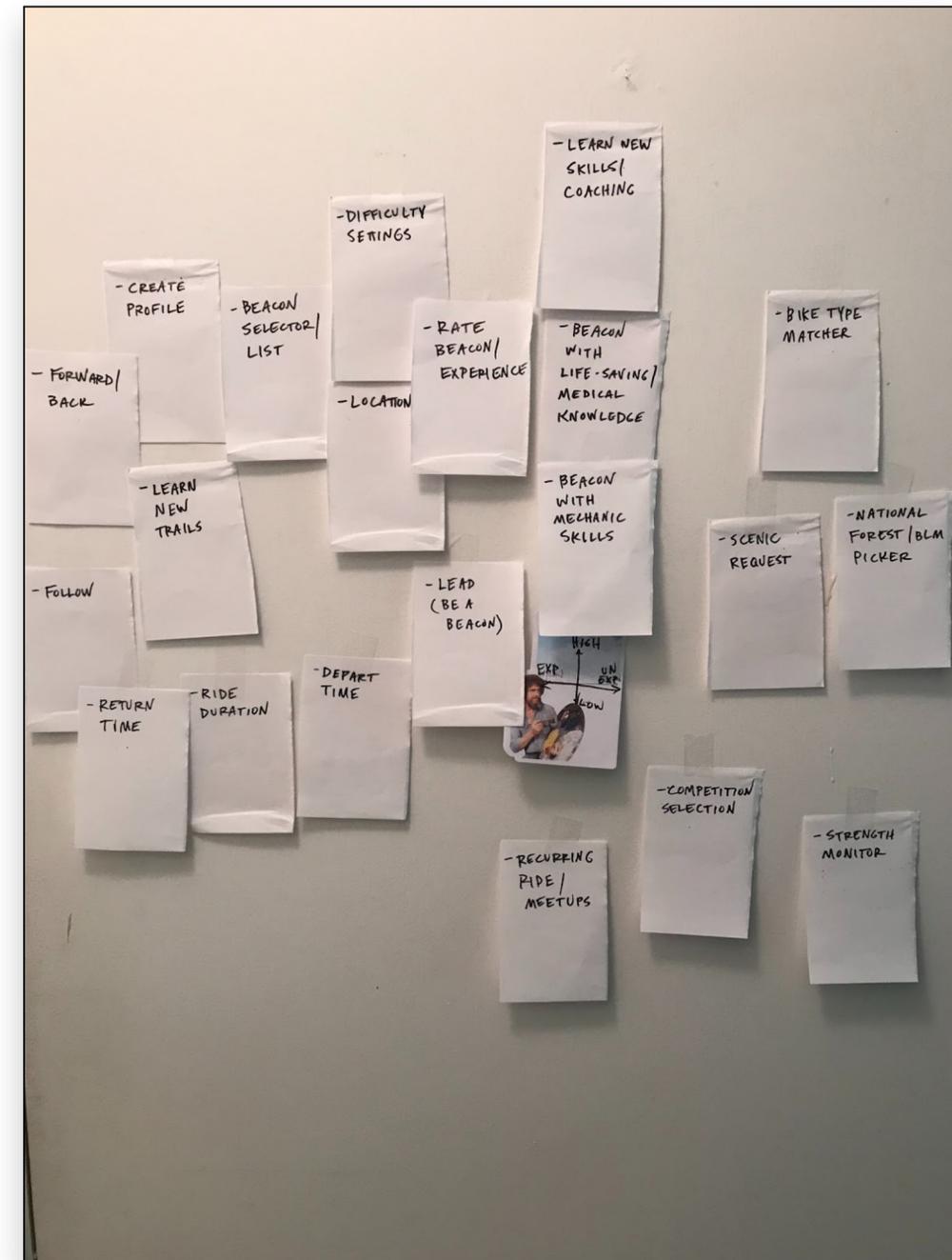
Create profile  
Back  
Follow  
Lead  
Beacon Selector  
Learn new trails  
Ride duration  
Difficulty  
Location  
Rate Beacon

## Next

Learn new skills/  
coaching  
Return time  
Beacon with  
mechanical skills  
Beacon with  
medical  
knowledge

## Future

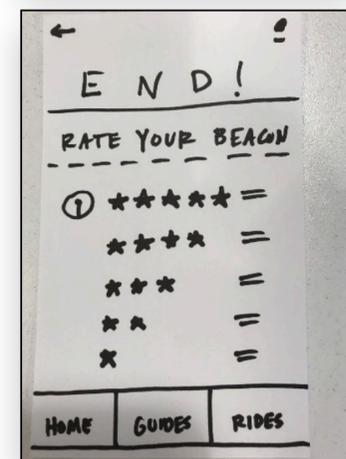
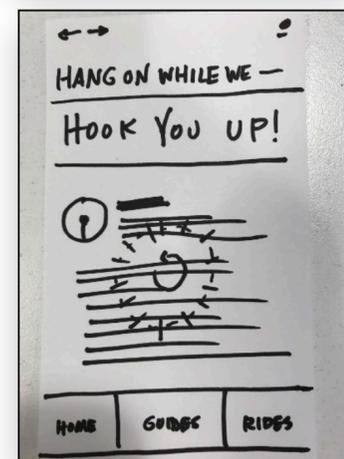
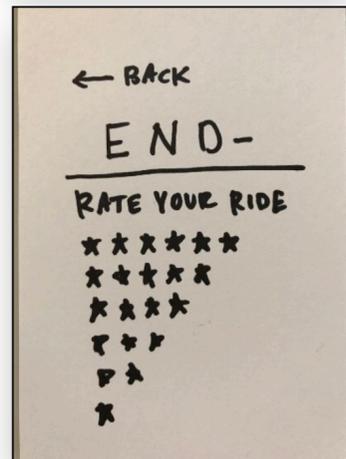
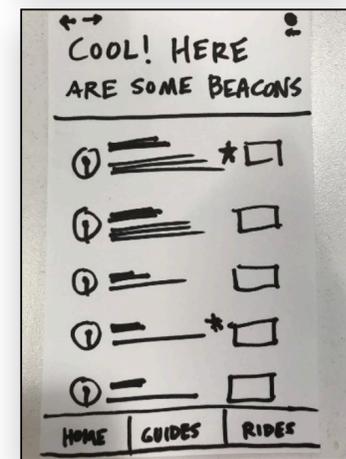
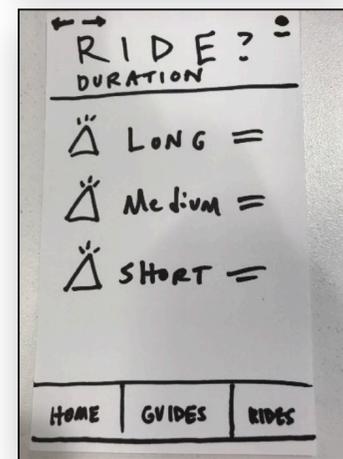
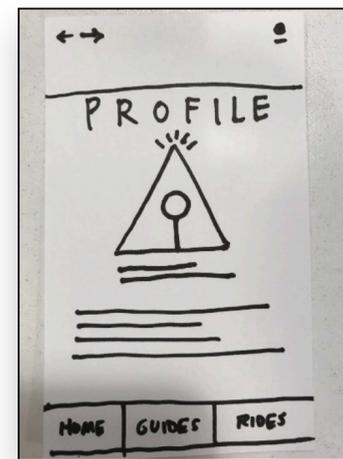
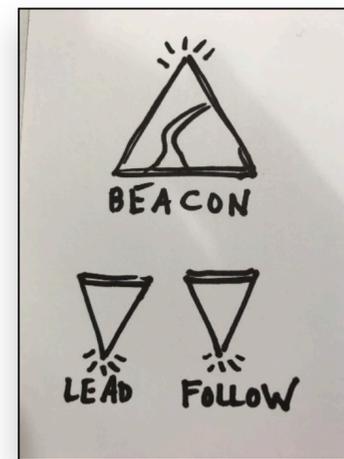
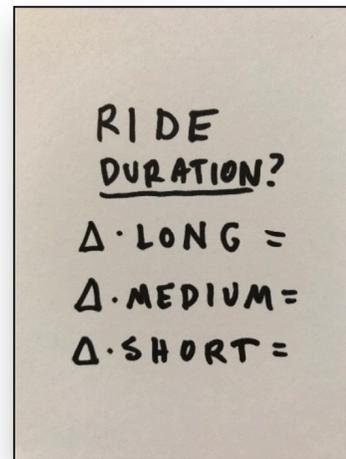
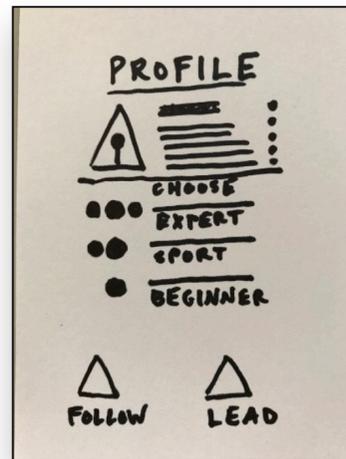
Bike type matcher  
Scenic requests  
Competition  
Strength monitor  
National forest/  
BLM picker  
All day epic choice  
Multi day bike  
packing adventure



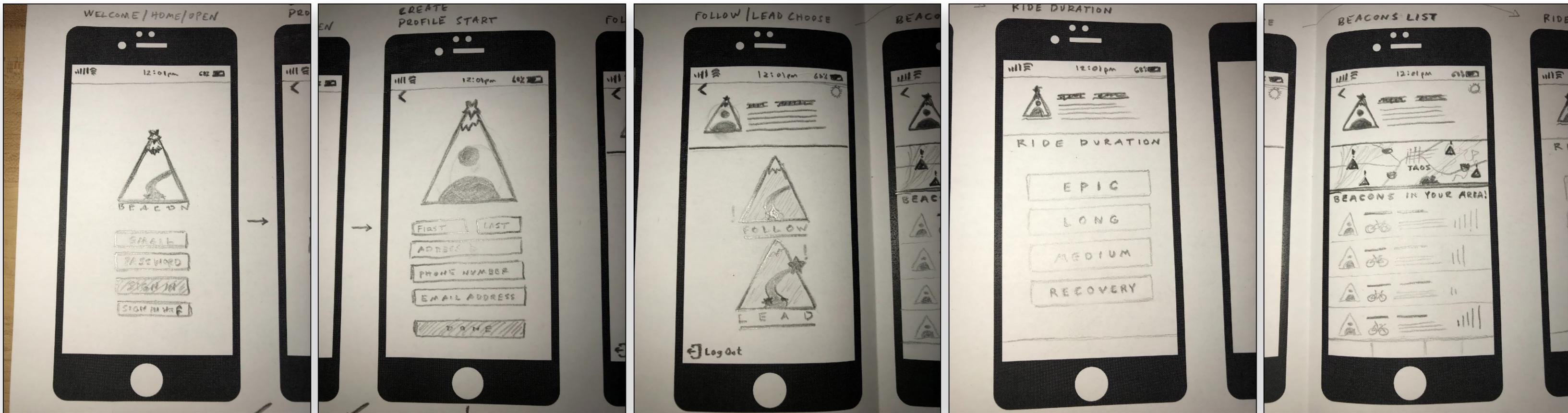
# Early Screen Sketches



# Early Screen Sketches



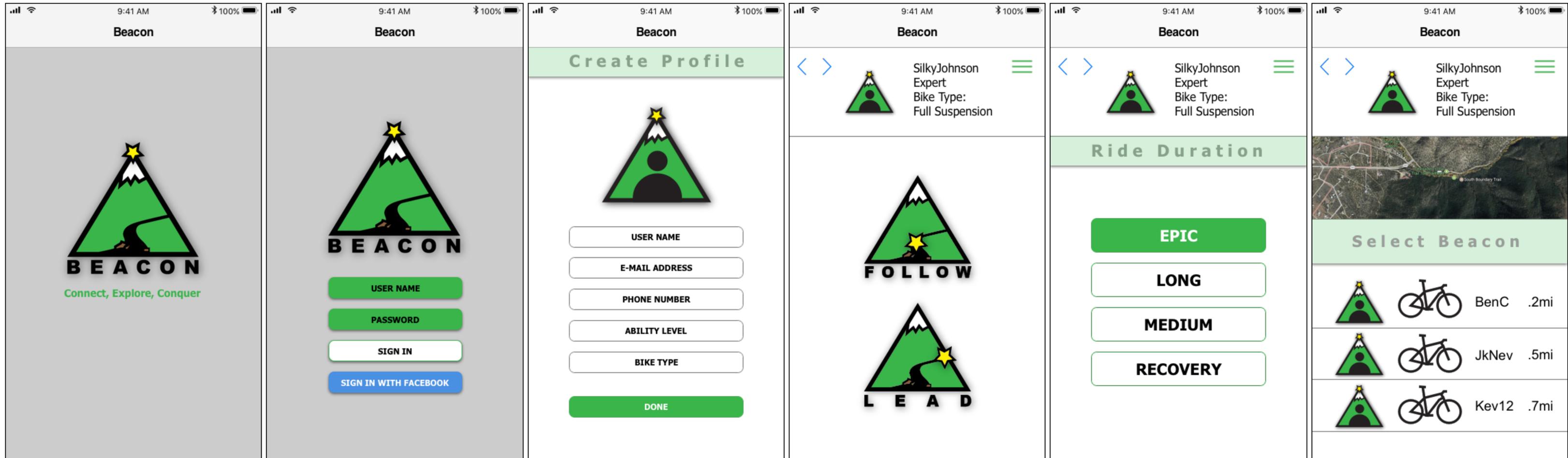
# Early Screen Sketches



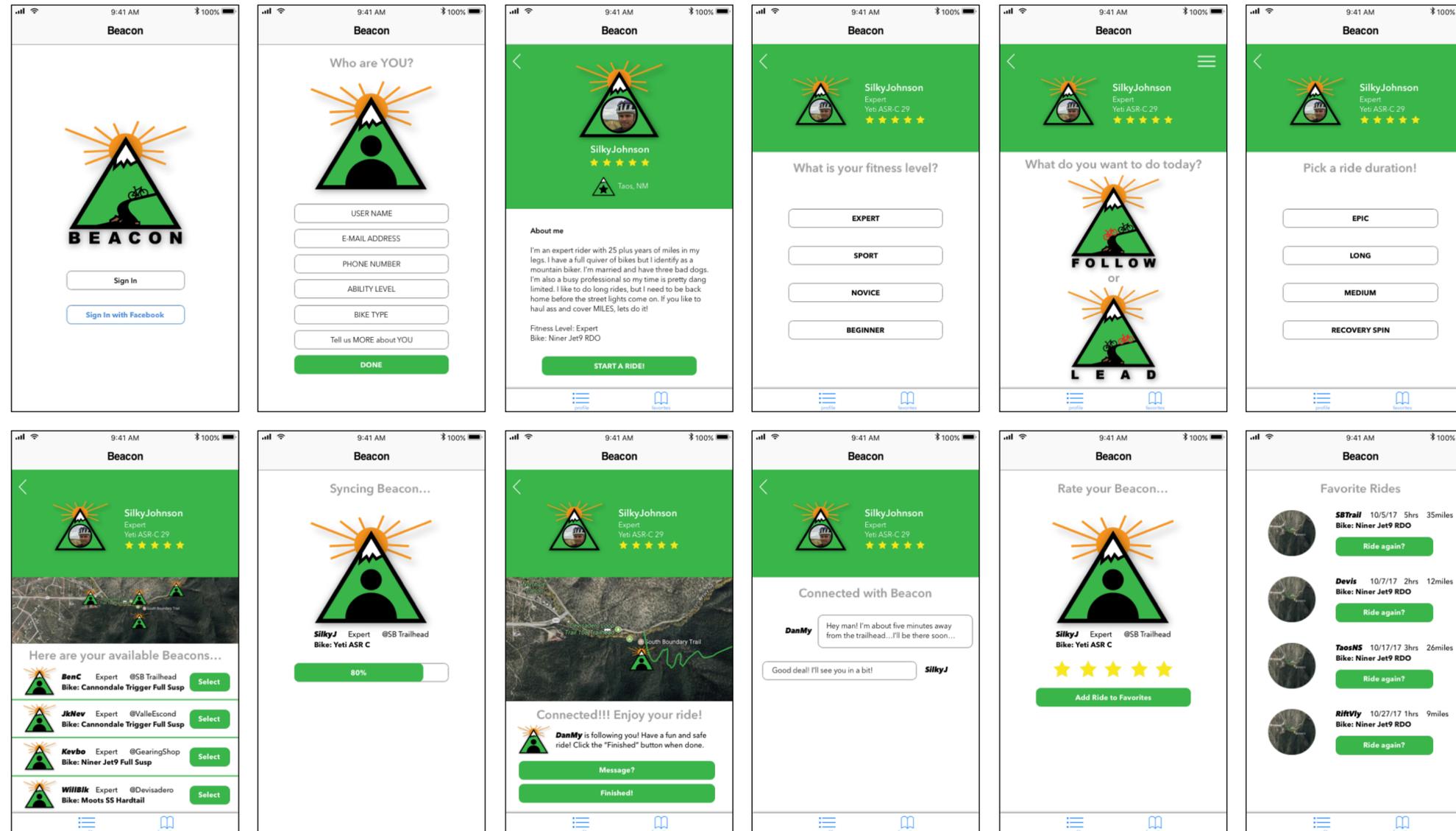
# Early Screen Sketches



# Design/Prototype Phase 1



# Design/Prototype Phase 2 User Testing



User Testing consisted of four sessions. All testers had good feedback. Some testers were actual designers which yielded the best results. A couple of the testers were riders and I was able to get some usable input from them. All had a crucial impact on the final product.

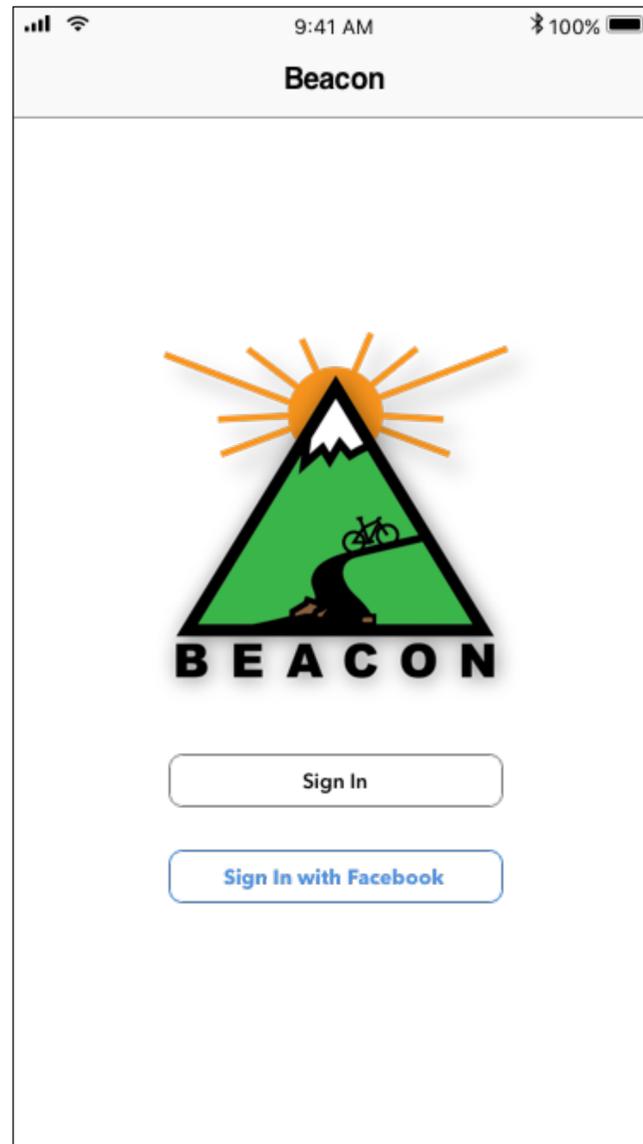
Changes included more info surrounding Beacon Bios, more info detailing ride durations, showing more of the map and the ability to click the map Beacon icons, visual notation of the connected screen, the addition of an "I'm lost" feature, post-ride comments screen, and a way to bypass Beacon rating final screen. All changes went into final prototype.

TASK SCENARIO: You've travelled to Taos specifically to ride, but the one bike shop there is closed for the day and you didn't bring a map and can't readily get a good one anywhere else because its Sunday AND on top of that, cell service sucks. Use Beacon to find a rider in the area to take you riding and help you NOT get lost.



# User Testing Changes and Annotations

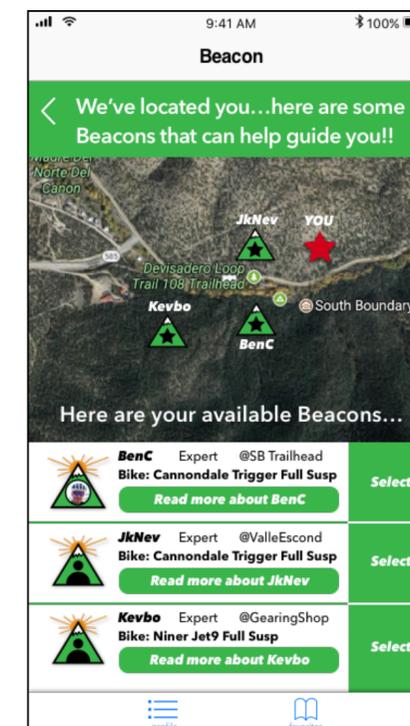
We also added some touches in the icons so you can see if you're following or leading.



FOLLOW function steps directly to Ride Duration screen

LEAD function steps directly to Ride Duration screen

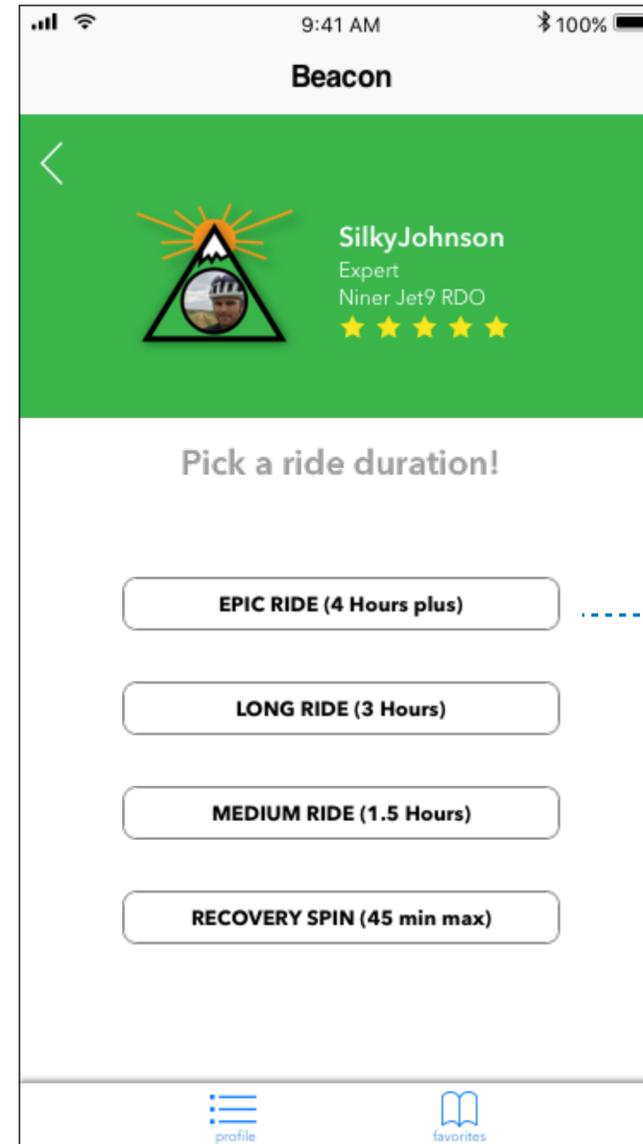
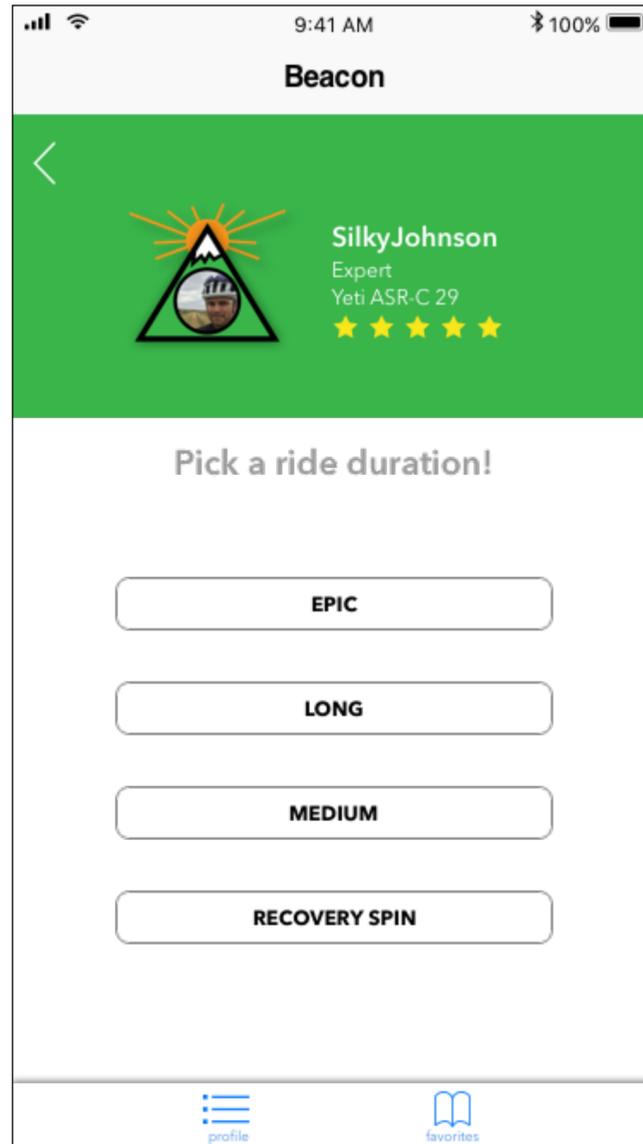
During user testing, I found that opening the app with the main functions was more ideal. Users noted that they had some apprehension about signing in without really testing out how the app works first. So...we led with it. Give them what they want!



OH! How could I forget?! Through testing, one user asked, "What if I go riding and THEN get lost?" Well...we added that! BOOM.



# User Testing Changes and Annotations



A simple thing like adding hour rates to the Ride Duration page seemed to help. Most riders might not know exactly how long an "Epic" ride lasts. Here, we tell them. It's a LONG time.

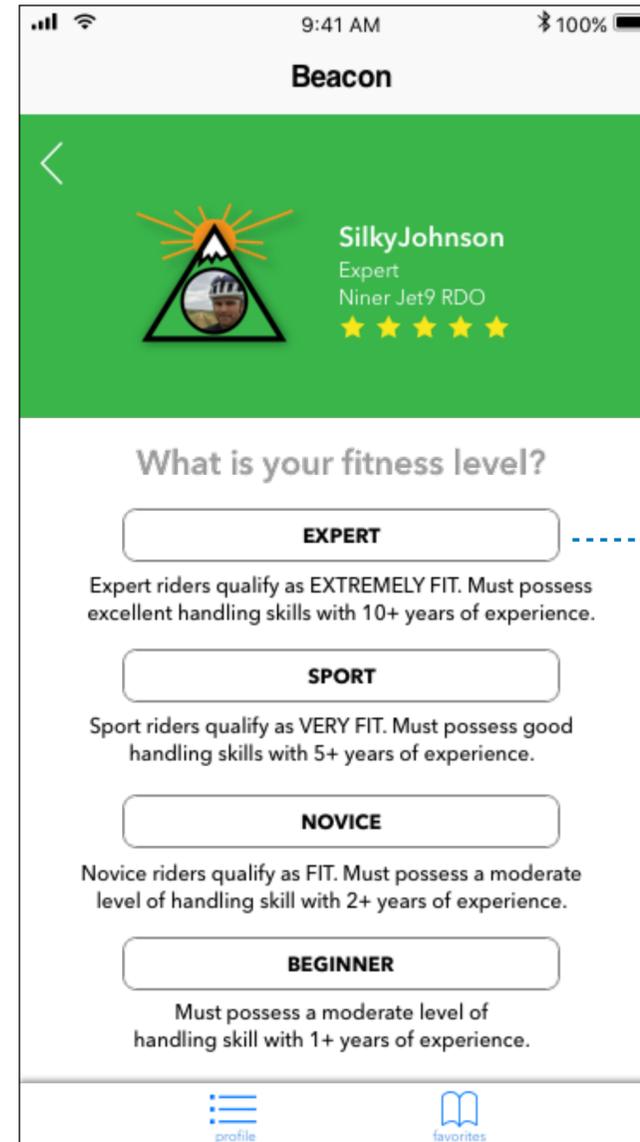
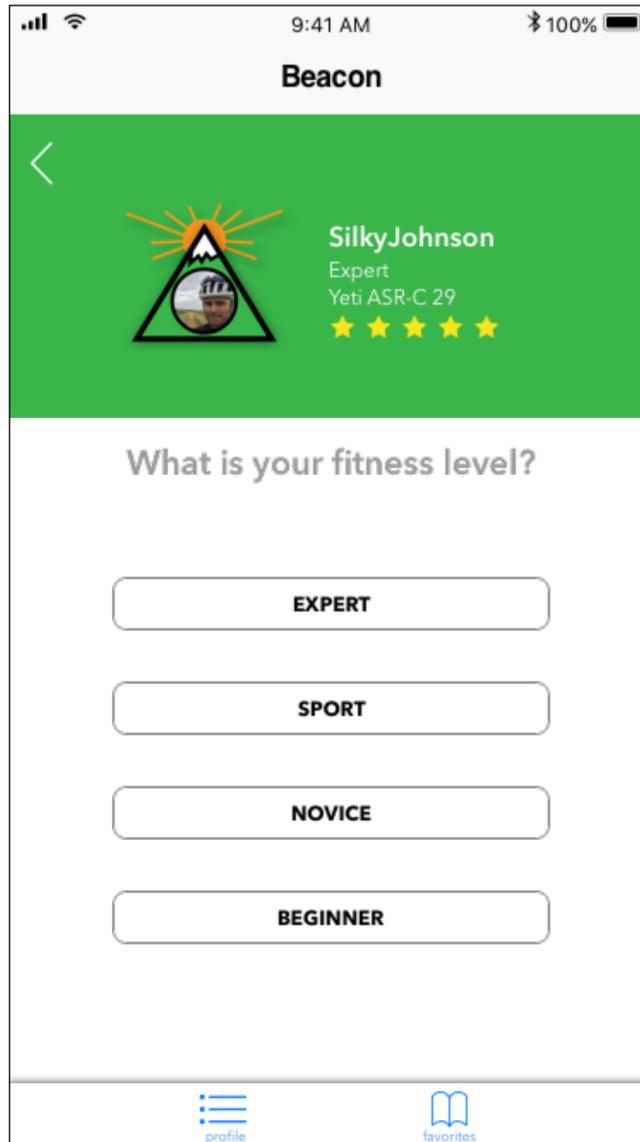
EPIC RIDE button goes then to available Beacons List page

PROFILE button goes to profile

FAVORITES button leads to favorite rides page



# User Testing Changes and Annotations

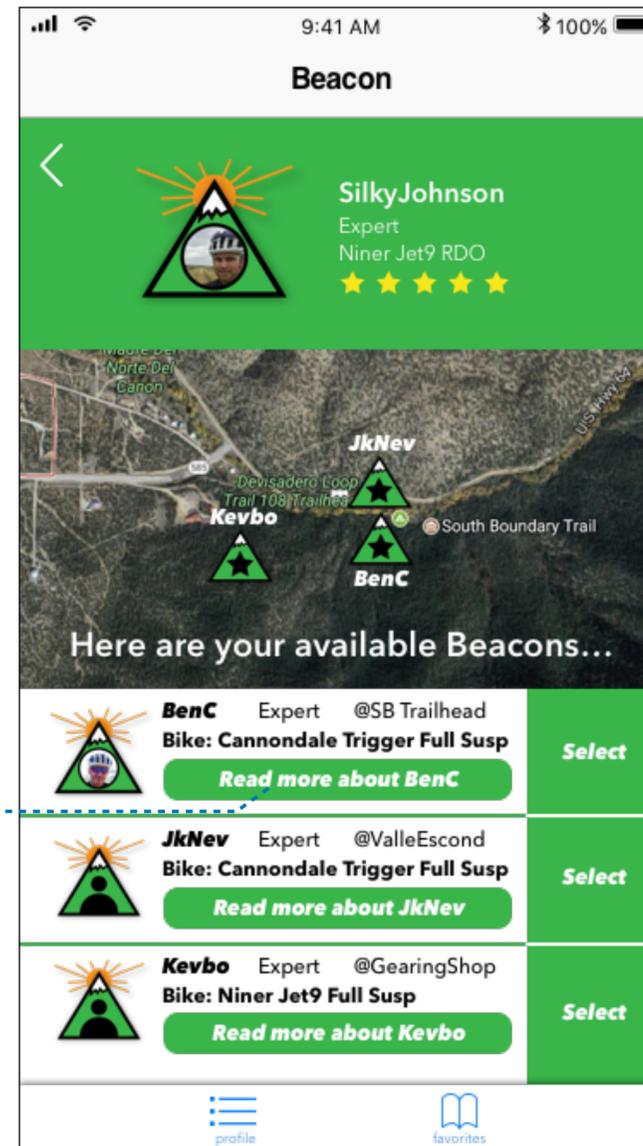
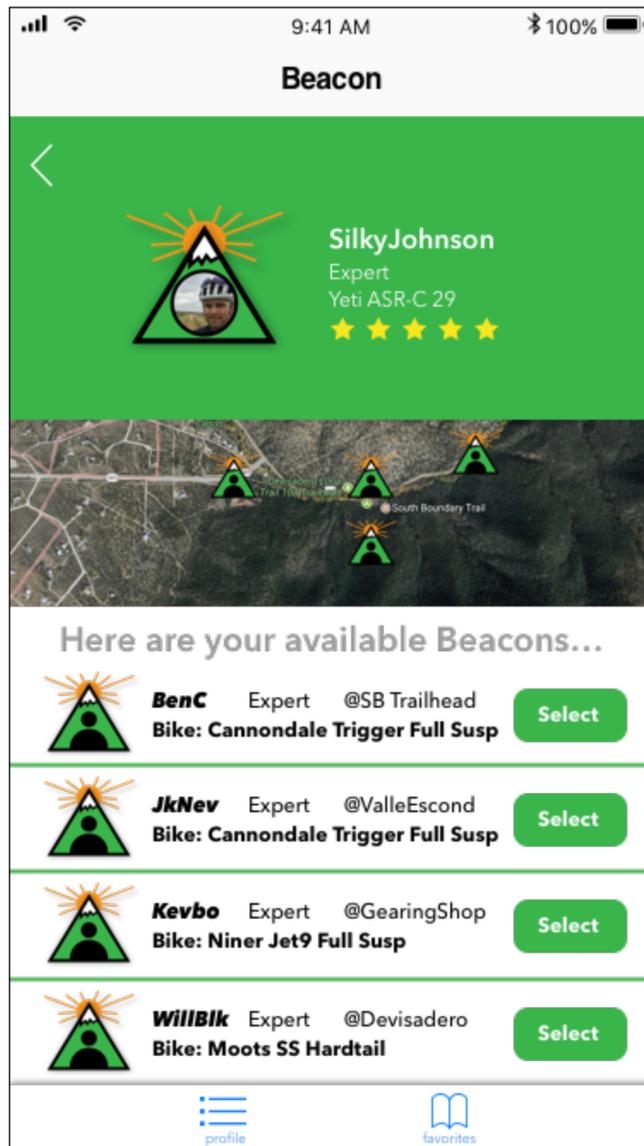


As with the Ride Duration page, here we added some information surrounding fitness levels. Some riders may not know exactly how 'fit' they are. With the addition of this info, hopefully it will help some not bite off more than they can chew!

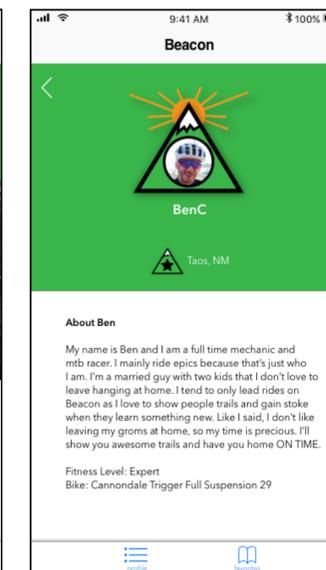
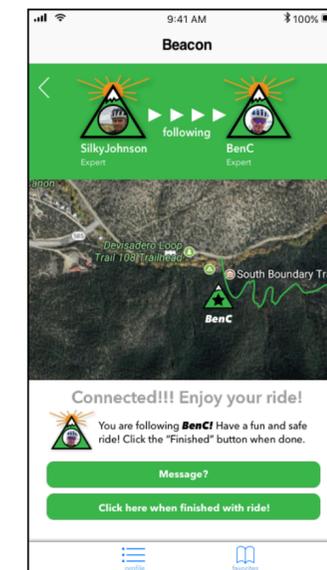
EXPERT button goes to profile screen



# User Testing Changes and Annotations



Some users expressed interest in seeing more about the Beacon. Nobody wants to hook up with a murderer after all. Also, as requested we made the map bigger on this screen and the map icons clickable. Minimized the upper area as well.



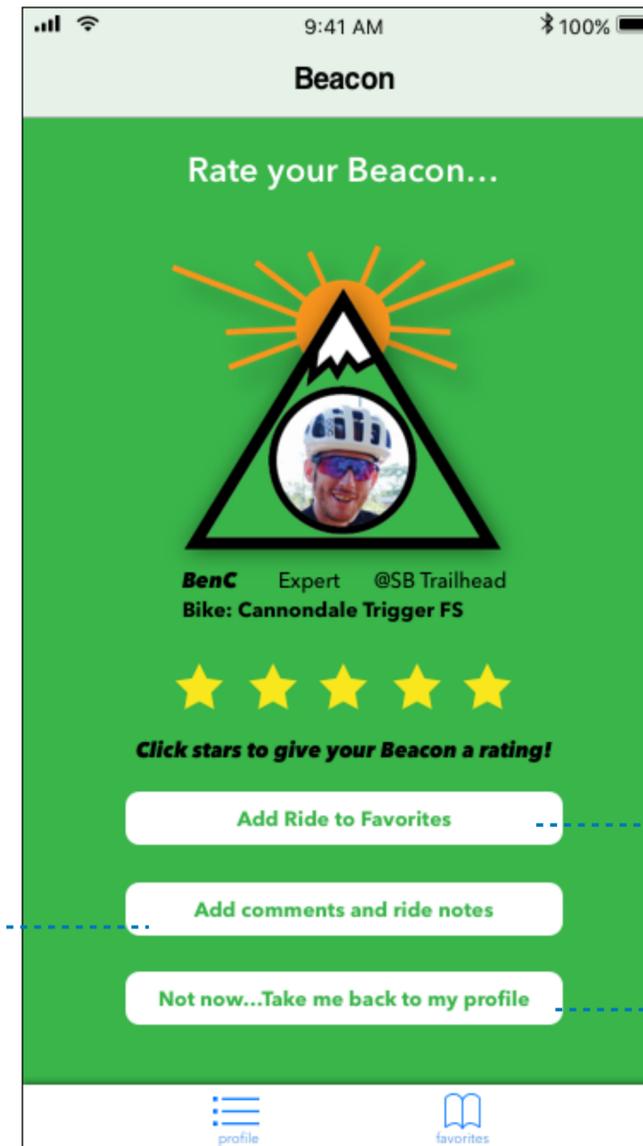
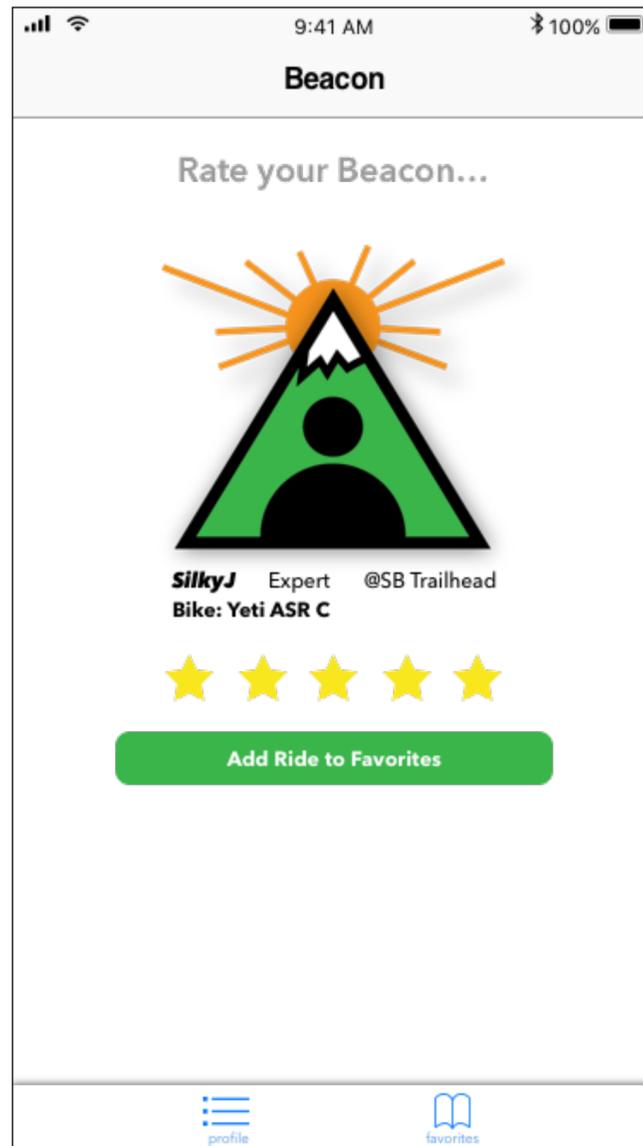
On the next screen, we added the bigger map view and a way to see who you're connected to up in the top area of the screen. AND, we added a Beacon profile screen so you can see WHO your guy is!

Read more button goes to a new Beacon profile page with info about Beacon

Select button goes to Connected screen where you can message Beacon



# User Testing Changes and Annotations



Testing let us know that one of the final steps led to a bit of a dead end, so we fixed that. We added a way to bypass adding to favorites/rating the Beacon. Now you can finish and start another ride without having to do all that stuff that full users might. Freedom!!!

...we added some pictures to the icons too...  
isn't Ben pretty?

Add Ride to Favorites button adds current ride to a Favorites list so you can use it again later

Not Now button takes you back to your profile so you can start another ride if you don't want to log info

Add Comments button take you to a screen where you can add notes and comments on the ride and your Beacon



# Next steps

Continue to test with users to achieve:

- Improvements
- Alternates to "Happy Path Scenario"

Build in additional features:

- Add in Bike Type Matcher, Skills coaching, and Scenery Requests...MAYBE a post ride meal feature???

Finally....Incorporate feedback from final presentation...

## NEXT, Next steps...

Keep riding and exploring!!!!



# Final Prototype

Link: <https://invis.io/72EAVNW5B>



**BEACON**

**Connect, Explore, Conquer**

**Thank you!**

