Richard

- Hard to tell that a charge has begun
- Cars stop charging at a specific point, typically in the 75-80% range since it takes as long to get from 80 to 100 as it does 0 to 80
- Different charging speeds: 110, 220, and super charge
    - 110 is home, 220 is washer/dryer
- Different outlets for different cars, most people don't know the name of these outlets
    - Give users pictures so they can select which outlet shape they have
- Need to enter in PID to charge somewhere for the first time
    - Sign up for all nearby chargers when user creates account?
- No way to tell if charger is busy from Ford interface
    - No way to tell actual speed or outlet port
    - Can't always tell if charger is free or costs money
    - How long will charge take?
        - Especially bad if it is late at night or in an area that the user doesn't deem as safe
- Ford and chargers have a poor UI, not very user friendly
    - Filtering for chargers isn't necessarily apparent
    - Takes a few clicks to find current charge on the dashboard screen
- Actual car is really cool!
    - Fast acceleration was weird at first
    - No gears (makes sense in hindsight)
    - No coasting unless user sets it to coast
    - Had a lot of "well, duh" moments after being told about them

Kirsten

- Charging api with cars to show the car's charging rate and amount is a possibility
- UI on the mustangs center console was difficult to navigate and information was hidden
    - Needs minimal redesign so streamline important information to the user
- Charging station took a lot of set up with help being a small card to read on charger
    - If night, it would be difficult to see or read
- Hard to know if the car was charging even though the charger was plugged in, turns out it wasn't
- The charger was not free, no mention of cost on the machine any where
- Only 3 of 4 available charging stations were available
- Limited parking
- What does the user do while the car is charging? Advertise stuff to do walking distance from their charging car
- 80% max on most charging stations
- The big focus will be seamless integration between our application and the other charging services

- - Focus on the users radius using zip code?
- Liked how the mustang drove! Very fast acceleration

Joe

- Was unaware of fact that you could only charge ~ 75%.
  - If you are at +80%, then the car won't take more charge.
- Having to go through obstacles only to charge.
  - Downloading and app is a common thing with non-Tesla owners.
  - Apps being deceiving, will cause desperation if driver is stranded.
- Was difficult to know whether or not the car was charging or not.
  - Tesla is superior in this category, non-Tesla owners have to prepare minutes ahead before their first charge.
- The acceleration was impressive.
  - Little to no sound. o From 0 to 34-36mph in a second.
  - Felt sturdy, and reliable.
- The UI was also reliable.
  - Navigated smoothly.
  - Clear and easy to understand.
  - For a new EV owner this will be like second nature after a day.

We will have to find a way to better the experience of the new non-Tesla EV owner. This was a great day to look more into the pain of those owners, because this is the way the world is moving and maybe we might own one in the future. We had to have some sort of empathy in a way. From that I learned that it wouldn't be pleasant as Bob said "being in a tiny country town at 2am and having to have some sort of worry." Learned a lot of the useful tips to approach anything in the industry.

Craig

Finding and navigating to chargers with the Mustang's built-in interface seems to work well. The list of chargers blends together, though, which could make it hard to compare them by charge speed, as an example. The charge level of the vehicle was hidden behind three menus, and while this information could also be seen on the dash, it could be more obvious to the user how to find it.

Once the user arrives at the charger, it may not be obvious which charger is the one they navigated to. There can be multiple chargers next to each other, where they could all be different speeds and prices. Apps such as ChargePoint have user-provided information that could make this more obvious, but they are not always reliable. It was also not immediately obvious if the vehicle was charging or not.

One of the bigger issues with the charging experience is that chargers are associated with their own services, and may require an app specifically for that service alone. Compare this process to gas pumps – where the payment process is fast and uniform – and it is apparent that improvements could be made. It would be frustrating to have to download multiple apps and purchase multiple services to get through

a single trip, so I think an app that unifies all of these services into one could greatly simplify the EV experience.

Lucas

- Charging:
    - The process of charging a car is convoluted and tedius.
    - For most any charge, the user must go through multiple companies' software.
    - Current solutions are unefficient and impractical. They only do half the job and not the good half.
    - There is no consistency amongst charging companies and even within a single charging company, the process is excessive.
- Mustang:
    - Excelent car, most physical characteristics are designed practically.
    - The draw back is the software. The GUI seems not quite tested enough.
    - some common information like charging rate/progress aren't in the area one would expect.
    - Other bits of information just arn't obvoius or even existent. It is hard to tell when the car is or isn't charging.
    - The GUI is full of information. This might be great from an enthusiest's point of view, but the typical consumer may find this overwelming. Despite the desnity of the interface, it still takes 3 taps of the interface to see the charge on the center console, and thats if you know what buttons to actually press.
    - Overall, the car is great, the GUI just needs better usability for a more typical consumer.

Thank you Bob for the ride and coffee, we all learned a lot.