1. How did you determine your "days of use" metric?

By adding up the power use on different modes, I can figure out how long the battery will last between each mode. I divide the mode into 10 hours off, 8 hours on hold and 6 hours on actually running based on most of the taxi driver's working habits. When I did the math, I figured out my system will need around 1465 and 1188 kW per day. And if I use 400 mAh batteries for both of the devices, it can last about a day and half. Which I think is a pretty reasonable cycle.

2. What do you think is the optimum size for the battery in your device?

As I mentioned above, the cycle of a day and a half is perfect for my user's condition as a taxi driver. The 400 mAh battery is perfect for both devices since the power consumption is pretty similar. At the same time, I want it to be more than a day to avoid calculation errors. Also, I would like to mention that for my display device a usb connector will be better, in that case, when you plug the device in the car, the power will always be on. Which means you don't have to change batteries everyday and it can make the user's life way easier.

3. What hardware/software/cost/effort tradeoffs could you make to improve the user experience?

Hardware: Based on my calculation, the display device(stepper motor) will consume most of the energy, which means if I switch on an old display it could only use full power when the price and distance display need to be updated.

Software: I could make the system sleep more during the wait time and program it only wake up for every 5-10 seconds, it can save way more energy but at the same time the display can be delayed for a little. But in my opinion, this is not a precision instrument, so this device can afford the negative effect of signal delays.

My best solution to improve the user experience:

- Change the battery to cable output, so when you plug it in to cars it will have power automatically. Can be way more reliable.

-Change my sensor device to button cell, because the mAh will be way higher and it can last way longer.

-Make the sensor device disposable to improve the convenience.