IxDF Project 3

DESIGN BRIEF

Explore new paradigms and controls for three specific semi autonomous vehicles.

OVERVIEW

The Ford Motor Company has spent the last several years exploring autonomous vehicles and has determined that, for regulatory and legal reasons, they want to start creating and selling **semi-**autonomous vehicles. These vehicles are classified Level 3 on the autonomous scale.

The vehicles on which Ford wants to test out this new technology aren't cars. Car use is down among Gen Z, and they want to move into markets that would better serve younger customers who are more likely to try and purchase electric, semi-autonomous vehicles. Therefore, Ford wants to explore:

- Electric Scooters
- Electric Bikes
- Electric Mopeds

Ford needs to explore new controls and new paradigms for these vehicles.

LEVEL 3 AUTONOMY

Level 3 is known as conditional driving automation. It uses various driver assistance systems and artificial intelligence to make decisions based on changing driving situations around the vehicle. People inside the vehicle do not need to supervise the technology, which means they can engage in other activities. However, a human driver must be present, alert, and able to take control of the vehicle at any time, especially in the case of an emergency due to system failure.

Drivers cannot be completely distracted or asleep while operating a Level 3 conditionally autonomous vehicle.

The key difference between Level 3 and Level 4 automation is that Level 4 vehicles can intervene if things go wrong or there is a system failure. In this sense, these cars do not require

human interaction in most circumstances. Level 3 automation can require a human driver to take over quickly, in ambiguous or dangerous situations.

OVERVIEW OF VEHICLE CAPABILITIES

The vehicles will have similar components. They must include:

- Dashboard. The dashboard needs to convey at least the following items:
  - Speed (0-60)
  - Battery Power (No power - Fully charged)
    - Estimated miles remaining
    - Charging (when plugged in)
    - Charging while biking/braking (bike only)
  - Autonomous driving indicators
    - Warning for the driver to take control
      - Estimated number of seconds countdown (5 to 0)
        - Vehicle will always try to give driver 3 seconds to react
    - Indicator that autonomous driving is on
    - Indicator that the vehicle is slowing down to a stop and the driver needs to prepare to put feet on the ground to balance
  - Turn signals (Blinkers) on/off (not needed for bike)
  - [Warning Icons](#) for error states
  - Cellular wifi signal strength indicator
- Steering to turn left/right
- Hand brakes
- Accelerator (Everything but e-bike)
- Power on/off
- Mechanism to turn on/off autonomous driving (button, dial, switch, etc.)
- Turn signal controls and indicator on the dashboard they are on
- A place to attach a phone and a USB plug
- Speakers (two)
- Microphone
- Tiny camera (for face recognition)
- Horn

Headlight will be on all the time so no need for a control.

Other indicators can be added.

Vehicle should be unlocked with Face Recognition.

The dashboard space can be no more than 9" wide and 6" tall. The screen can be a touchscreen.

MOBILE APP

The vehicle should have an accompanying mobile app: a home screen that shows its general functionality and navigation is all that is necessary. You are free to determine what should go on the app. Determine what would be useful for a user to have on an app that accompanies this kind of vehicle.

OTHER CONSIDERATIONS

When appropriate, use the [Ford Motor Company Branding Colors](#) but do not feel limited to them only.

Use the [Ford Antenna Font](#)

Because of regulations and safety, no task can take a driver more than two seconds to complete.