



Automated Vehicles – Minimum Nonvisual Requirements

The National Federation of the Blind, the nation's oldest and largest organization of blind Americans, knows that blind people will be one of the largest beneficiaries of the proliferation of fully automated vehicles (AV). To that extent, we believe that there are certain fundamental and necessary features for the blind user, outlined below, to have the ability to access and operate the AV. These features will enhance the usability for other passengers as well.

Vehicle Location System: The blind user needs to have equivalent ease of use during the pickup process as the sighted user. The vehicle must be easily identifiable and must be able to determine where the user is waiting for it or be able to direct the user to an appropriate pickup location. Also, depending on the type of vehicle, there must be a feature to identify the orientation and point of entry. Additionally, the vehicle should give the user basic dropoff information (i.e. Is the vehicle at the curb? Is the destination ahead or behind the dropoff location? Is there a bus or bicycle lane between the vehicle and the location entrance? etc.).

Navigation and Maintenance Controls: These involve programming a destination, and features to change the trip after it begins. Features are needed that allow the blind user to monitor the trip along the way, such as identifying important buildings, landmarks, streets, and other important information. The blind user needs to be told or signaled about the battery level. Also features for finding and connecting the power sources may be necessary.

Interior Environment Controls: The blind user must be able to regulate the internal environment. This includes nonvisual methods to control the internal temperature, opening and closing the windows, operating the entertainment system, and moving the seats.

Exterior Environment Alerts: The blind user must be provided information when the car experiences quick changes, stops, and emergencies. Examples of these situations would be heavy traffic, changes in the traffic pattern, sudden obstacle avoidance, detours, and mechanical or equipment malfunction. The AV needs to alert and tell the blind user that one of these situations is occurring, allowing the rider to make an independent decision on what to do.