* DRIVE-BY-WIRE System is a technological development in automotive industries. This is also popularly known as X-by wire systems
* In this technology we replace Mechanical and Hydraulic components of the system with Electronic controls (i.e., instead of physical linkages & connectors sensors control the vehicle functions.
* FUCTIONS OF DRIVE BY WIRE
* THROTTLE BY WIRE

1. In this method the accelerator pedal is connected to the sensor which passes Electric Signals to Engine Control Unit (ECU) to adjust the throttle potions.
2. This throttle by wire replaces the mechanical cable connect in the device.

* BRAKE BY WIRE

1. Brake by wire replaces the hydraulic brake line with Electronic controls.
2. Brake by wire replaces the hydraulic brake line with Electronic controls. The sensor detects force applied the drive and signals the actuators to apply the brake. Which increases the safety of the device.

* STEER BY WIRE

1. The Conventional Steering Columns were replaced with Electronic Controls.
2. Detects the drivers steering inputs and transmits to Electric Motor that controls the Angle of steering and improves safety

* SHIFT BY WIRE

1. Electronic controls replace mechanical linkages in the gear-shifting mechanism. Which ensures smooth and quick gear shifts

* MAIN COMPONENTS IN DRIVEBYWIRE

### SENSORS:**To** Detect the position of pedals, steering wheel, and other control inputs. For example, throttle position sensors (TPS) measure the position of the accelerator pedal ,Measure the speed of the vehicle and wheel rotation to provide data for control systems and also to Measure the amount of force applied to the steering wheel or other controls.

ACTUATORS: Actuators play a crucial role in drive-by-wire systems by converting electronic signals into mechanical movement or action. They are essential components that directly influence the operation of various vehicle systems, replacing traditional mechanical Operation

ELECTRONIC CONTROL UNIT(ECU): These units are essentially the "brains" of the electronic systems, responsible for processing data from sensors, making decisions based on algorithms, and controlling actuators to execute desired actions. Here’s a detailed look at the use and importance of ECUs in drive-by-wire systems

* ADVANTAGES OF DRIVE BY WIRE:

* WEIGHT REDUCTION OF THE VEHICLE
* INCREASE RELAIBITY AND SAFETY
* EFFICENCY AND ENCHANCED PERFORMANCE
* FLEXIBILITY AND COMFORT