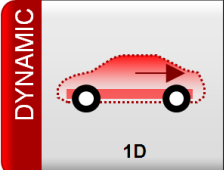
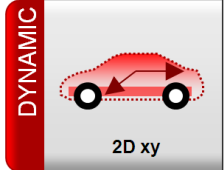
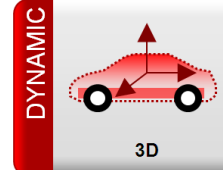

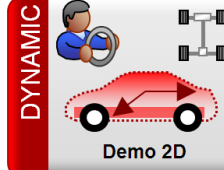


Vehicle Dynamic

1 Dimension	2 Dimensions	3 dimensions	Driver	Demo Driver / vehicle
 <p>DYNAMIC 1D</p>	 <p>DYNAMIC 2D xy</p>	 <p>DYNAMIC 3D</p>	 <p>DRIVER</p>	 <p>DYNAMIC Demo 2D</p>

The Vehicle Dynamic library includes a set of components in mechanic and automatic domain allowing engineers to develop a model of vehicle, considering 1, 2 or 3 dimensions :

1 Dimension: Only vehicle longitudinal behaviour is considered (X direction)

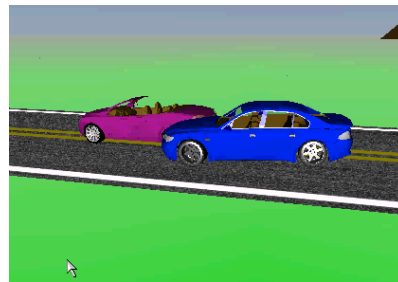
2 dimensions : Longitudinal and lateral behaviour is considered (X, Y direction, pitch, roll, yaw angle)

3 dimensions: This complete model consider X, Y, Z direction, and pitch, roll, yaw angle.

Each vehicle can be driven with a model of driver available in this library. Driver model can brake, accelerate and turn wheel, according to road cartography and driving cycle (also available in this library)

Option

In option, vehicle can be displayed in a 3D environment (video link) or be driven with an external interface



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Vehicle elements



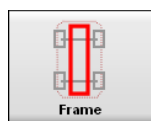
Aerodynamic

This block calculates the aerodynamic forces from the frame velocity and the wind velocity.



Suspension

This block calculates the suspension force from the frame velocities and the wheel velocities



Vehicle frame

This block calculates the frame velocities from the suspension forces and the aerodynamic force.

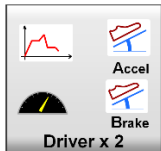


Ground contact

This block is a pneumatic contact model that calculates the tyre force from the wheel velocity.

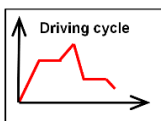
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Driver elements



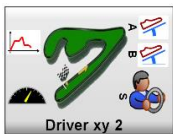
Driver X

This block is a longitudinal driver model (speed regulator that brakes and accelerates)



Driving cycle

This block is a Cycle Vehicle speed function of timer. Many driving cycles are available (ECE 15, EUDC, NEDC...)

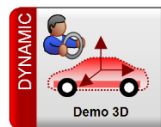


Driver XY

This element drives the vehicle in a XY defined road (to connect to vehicle 2D or 3D). It can also adapt its velocity in curve.

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Demos



Demos

3 Demos (1D, 2D, 3D) consider a vehicle model with simple powertrain and complete Driver